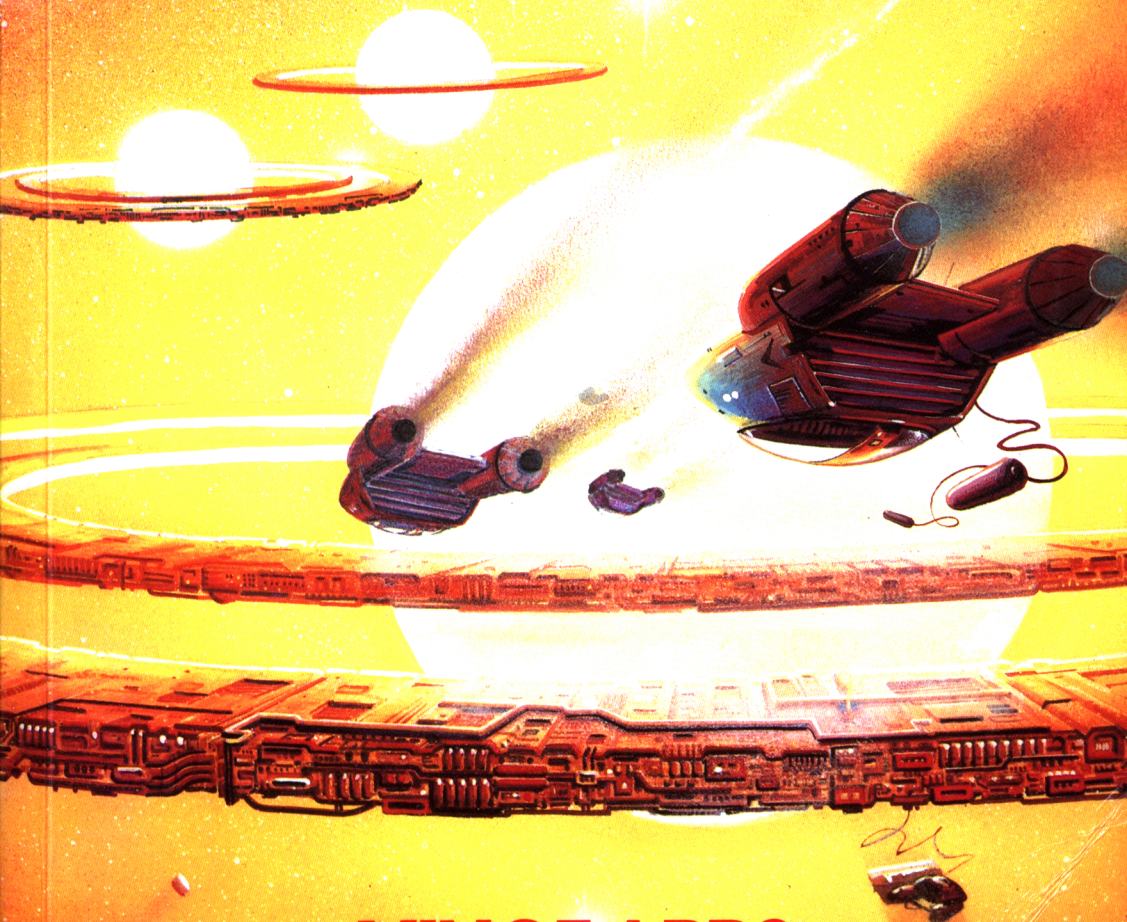# 40 EDUCATIONAL GAMES FOR THE AMSTRAD CPC464

VINCE APPS

40 Educational Games
For the Amstrad

40 Educational Games For the Amstrad

Vince Apps

Contents

Foreword

This is not a 'how to use your machine' book as we assume that the user will already have a working knowledge of the main commands on the Amstrad keyboard. The intention of this collection of programs is to help the young user to become more familiar with their computer, improve their knowledge and have fun at the same time. None of the programs is of great length as we are aware that younger users will want to see the results of their planning as soon as possible.

Virtually all of the programs will have a 'games' element to encourage the user to beat the machine. In some programs the junior programmer will be typing in the answers to the questions which the machine will eventually ask. In order to remove the certainty of a correct answer however, the computer will be requested to make random choices from the information given.

As can be seen from the contents list the programs cover a wide area of interest including mathematics, geography, grammar, weights and measures and music.

The programs have been designed so that they can be adapted to include more complex questions and so increase the user's ability.

Introduction

This collection of programs has been written for junior users to pit their wits and test their knowledge.

We have designed these programs so you can learn how to use your Amstrad computer by typing in your own information. None of the programs is too long to input into your machine as the idea is to help you sharpen up your mind - not to turn you into a typist.

Once the program is in the machine you will be able to begin answering the questions and improving your knowledge. The faster you respond the quicker the computer will ask you the next question.

You will be surprised how quickly you will learn how to use your Amstrad, and how soon you will want to move on to the next program.

As soon as you know how to enter these programs - and beat the Amstrad - you will be able to change the content in the lists and make things even more difficult for yourself.

Things to remember

Your Amstrad works with it's own language called BASIC. If you try to 'speak' to your machine in another language then nothing will happen, except that you will get a nasty message which says 'error in line'.

Programming is not like writing an essay for class. Your teacher

might let you off with a mild caution if you miss out a comma - your Amstrad will not.

You have to follow, exactly, the 'characters' shown on the program listings in this book. If you miss a comma, or enter a dash by error, then the program will not work. You cannot put in any other instruction and expect the machine to work. If you have typed in your program and the Amstrad will not 'run' as instructed, then you will have to check your 'list' against the book for 'bugs'. Check carefully before you decide to throw your machine out of the nearest window!

We know that the programs listed in the book are 'bug free' because, not only have we checked and double-checked them, we have reproduced them from our Amstrad using a mechanical printer.

We did this because it makes things easier for you and also for our own printers when they produce our books. If you are really having trouble however you can always ask your parents. They **should** be able to help you.

Cassette Storage

Once you have gone through 'inputting' your programs you can store them on cassette tapes for future use.

Cassette tapes will take up some of your pocket money but they mean that you will always have quick access to your list of programs.

Having your programs on tape also means that, when you have improved your programming skills, you will be able to rewrite the programs we have given you.

1

Counties
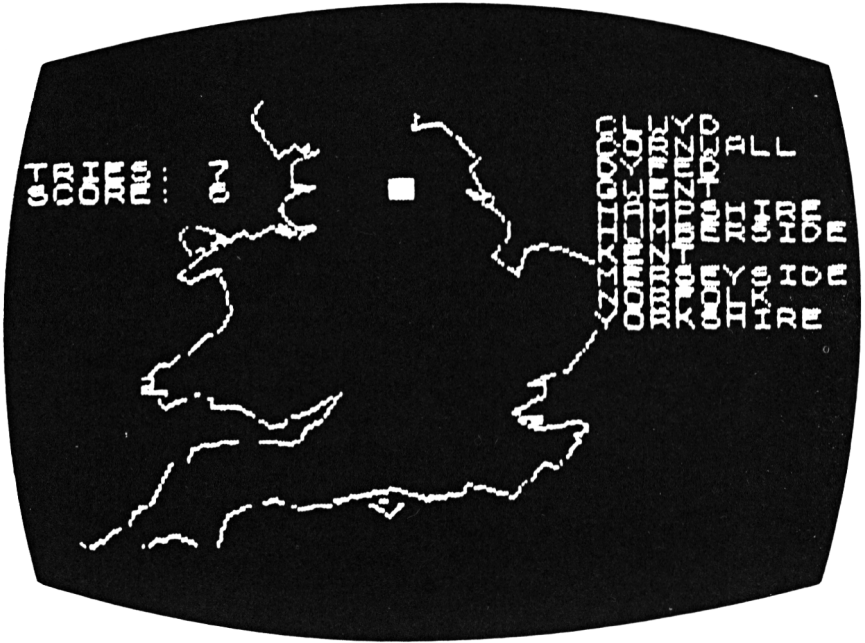
A few years ago the Government changed the names of most of the counties in England, Wales and Scotland. Some people still call them by their old names so we have come up with this program to help you make sure you know the new names and where they are.

Your computer knows where Gwent is - do you?

How to play

The computer will draw an outline map for you and give you a list of ten county names to choose from.

The computer will then choose, at random, an area for you to identify. A sign will indicate the area in question. Type in your answer in lower or upper case (capitals).

Tries and scores are shown on the screen.

If you are wrong it will be a case of try, try again until you get it right.

Programming Notes

This program uses the same map drawing routine as 'towns' and 'compass'. See the introduction to 'towns' before typing in 'counties'. The rows for county names are held in the data statements 260 to 270. If your county is not here, why not try and insert its name and position?

Program

```
1 'Counties
2 '(c) 1984 BY VINCE APPS
3 'AMSTRAD CPC 464 version by R.P.Jones
10 'Map Data - England
20 DATA 44,46,50,45,60,44,70,40
30 DATA 80,44,90,52,100,56,110,50
40 DATA 120,56,130,72,140,68,150,64
50 DATA 160,66,170,73,180,78,190,74
60 DATA 200,72,210,71,220,73,230,75
70 DATA 240,76,250,80,260,94
80 DATA 264,104,260,108,240,112,246,116,
244,123
90 DATA 256,125,256,132,264,136,268,144,
268,160
100 DATA 267,167,264,173,260,176,248,176
,240,175,224,171
110 DATA 224,180,224,189,216,200,212,205
,208,207,212,206
120 DATA 220,212,216,216,216,220,216,228
,206,236,200,242
130 DATA 192,252,188,260,180,280,168,302
,160,314,148,320
140 DATA 140,315,135,314,124,324,120,323
,100,318,100,301
150 DATA 98,294,93,287,92,276,86,280,80,
282,78,280,80,274
160 DATA 81,264,83,260,84,252,92,250,94,
```

```
259,106,252,112,260
170 DATA 119,256,124,260,131,264,135,263
,126,252,124,244
180 DATA 132,236,136,228,134,223,145,225
,142,220,140,212
190 DATA 138,204,140,196,136,200,136,192
,128,198,120,196
200 DATA 100,190,90,180,90,170,100,168,1
08,166,108,160
210 DATA 104,152,100,148,86,140,71,133,7
6,120,80,114,81,112
220 DATA 98,120,108,112,120,110,140,115,
149,118,140,107
230 DATA 130,100,120,96,100,96,100,92,90
,88,84,86,84,80
240 DATA 80,74,77,72,68,64,68,60,60,55,4
4,46,0,0
250 DATA CLWYD,120,190,CORNWALL,70,52,DY
FED,90,130,GWENT,136,130
260 DATA HAMPSHIRE,180,88,HUMBERSIDE,208
,216,KENT,240,100,MERSEYSIDE,136,202
270 DATA NORFOLK,240,160,YORKSHIRE,180,2
25
280 'Main Routine
290   DIM mappos(10,2),counties$(10)
300   score=0:tries=0
310   GOSUB 870:GOSUB 480:RESTORE
320   GOSUB 390
330   GOSUB 430
340   GOSUB 550
350   GOSUB 610
360   GOSUB 690
370   IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN 310
380   GOTO 350
390 'Clear and title screen
400   LOCATE 32,2:PRINT "C O U N T I E S"
410   LOCATE 32,3:PRINT STRING$(15,208)
420   RETURN
430 'Score Routine
440   WINDOW #1,60,78,5,8
450   LOCATE #1,1,1:PRINT #1,"Tries : ";t
ries;
460   LOCATE #1,1,3:PRINT #1,"Score : ";s
core;
470   RETURN
480 'County Names and Locations
```

```
490   WINDOW #2,60,78,10,20
500     FOR i=1 TO 10
510       READ counties$(i),mappos(i,1),ma
ppos(i,2)
520       PRINT #2,counties$(i)
530     NEXT i
540   RETURN
550 'Select and indicate county
560   random=INT(RND*10)+1
570   target$=counties$(random)
580   MOVE mappos(random,1)+30,mappos(ran
dom,2)+30
590   TAG:PRINT CHR$(143);:TAGOFF
600   RETURN
610 'Enter answer
620   LOCATE 20,22:PRINT "Which County is
 it ?  ";
630   i=1:answer$=""
640   z$=INKEY$:IF z$=""THEN 640
650   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
660   IF z$=CHR$(13) THEN RETURN
670   IF z$<"A" OR z$>"Z" THEN 640
680   answer$=answer$+z$:PRINT z$;:GOTO 6
40
690 'Ckeck Answer
700   IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN GOSUB 720 ELSE GOSUB 780
710   RETURN
720 'Correct
730   LOCATE 32,24:PRINT "C O R R E C T !
"
740     FOR i=1 TO 1500
750     NEXT i
760   score=score+1:tries=tries+1
770   RETURN
780 'Wrong
790   LOCATE 32,24:PRINT "W R O N G !"
800     FOR i=1 TO 1500
810     NEXT i
820   tries=tries+1
830   LOCATE 32,24:PRINT "               "
840   LOCATE 20,22:PRINT "
               "
850   GOSUB 430
860   RETURN
870 'Draw Map of England
```

```
880   MODE 2:INK 1,0:INK 0,13:BORDER 13:C
LS
890   MOVE 74,76
900   READ x,y
910   IF x=0 AND y=0 THEN 940
920   DRAW x+30,y+30
930   GOTO 900
940   RETURN
```

```
10 'Counties
20 '(c) 1984 BY VINCE APPS
30 'AMSTRAD CPC 464 version by R.P.Jones
40 'Map Data - Scotland
50 DATA -15,-5,-20,11,0,11,-20,16,-5,21,
-10,11,-10,-16
60 DATA -25,-32,-10,-16,-15,-5,-15,16,-2
0,11,-5,16,-20,5,5,27,-5,32
70 DATA 25,11,50,16,-25,21,0,11,20,0,20,
21,35,53,15,-5,15,16,0,21,15,-11,30,5
80 DATA 15,16,5,-11,5,0,5,5,20,-16,25,11
,0,-43,15,0,-10,-16,30,-48
90 DATA 5,16,5,0,5,-32,-35,-43,45,32,15,
-27,0,-16,10,-11,0,-32,-5,16,-10,16
100 DATA -5,11,-10,11,-5,-11,10,-32,-15,
-16,25,5,5,-16,-15,-21
110 DATA -10,5,-10,-11,-5,16,-10,16,-20,
-32,-25,-21,-40,27,-20,-11
120 DATA 750,75,-75,-11,0,-11,-25,-11,-1
0,-16,-15,0,-10,11,-15,-11,-20,37
130 DATA 0,-59,-10,-5,-15,11,-10,21,-25,
16,-15,21,-20,-16,5,-32,-5,-5,-25,69
140 DATA 15,16,5,-21,5,0,0,21,15,27,15,5
3,15,11,0,16,-20,27,5,53,15,16
150 DATA 30,-11,0,5,-25,53,-15,-43,-10,1
1,5,32,-10,0,-5,32,-10,-16,-10,37,40,37
160 DATA -25,0,-30,-27,0,-53,-30,-101,-1
5,0,-5,11,10,11,0,27,20,27,-5,69
170 DATA 20,27,-15,21,65,133,-5,0,-65,-8
0,-45,27,0,5,20,16
180 DATA 150,373,30,-16,5,-21,30,21,10,0
,-10,-16,50,21,20,-5,50,-5,20,27
```

```
190 DATA 30,-21,-15,-32,0,-27,-100,-80,0
,-16,-10,0,0,-11,25,5,0,-11,-25,-21
200 DATA -65,-69,5,0,40,37,5,-5,85,37,5,
-11,30,-11,20,11,50,-11,25,5,30,-11
210 DATA 5,-5,0,-21,-10,-27,-45,-123,-25
,-27,5,-11,-25,-32,-10,-5,-20,11
220 DATA -40,-21,-10,-16,0,-5,50,21,-10,
-21,10,-5,15,-16,-10,-16,-40,0,-15,-21
230 DATA -10,-5,-70,21,-10,5,0,-5,55,-37
,25,5,20,-16,10,0,20,21,5,0,25,-21
240 DATA 30,0,5,-5,25,-5,15,-21,0,-21,10
,-16,-30,-43,-10,-53,-100,-75
250 DATA 0,0
260 DATA ANTRIM,7,25,BORDERS,24,27,DOWN,
9,29,FERMANAGH,4,26
270 DATA FIFE,22,20,GRAMPIAN,25,12,HIGHL
AND,19,7,LOTHIAN,22,22
280 DATA TAYSIDE,24,16,STRATHCLYDE,17,24
290 'Main Routine
300    DIM mappos(10,2),counties$(10)
310    score=0:tries=0
320    GOSUB 900:GOSUB 490:RESTORE
330    GOSUB 400
340    GOSUB 440
350    GOSUB 570
360    GOSUB 630
370    GOSUB 720
380    IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN 320
390    GOTO 360
400 'Clear and title screen
410    LOCATE 32,2:PRINT "C O U N T I E S"
420    LOCATE 32,3:PRINT STRING$(15,208)
430    RETURN
440 'Score Routine
450    WINDOW #1,60,78,5,8
460    LOCATE #1,1,1:PRINT #1,"Tries : ";t
ries;
470    LOCATE #1,1,3:PRINT #1,"Score : ";s
core;
480    RETURN
490 'County Names and Locations
500    WINDOW #2,60,78,10,20
510      FOR i=1 TO 10
520        READ counties$(i),mappos(i,1),ma
ppos(i,2)
```

```
530       mappos(i,1)=11*mappos(i,1):mappo
s(i,2)=7*(40-mappos(i,2))
540      PRINT #2,counties$(i)
550     NEXT i
560   RETURN
570  'Select and indicate county
580   random=INT(RND*10)+1
590   target$=counties$(random)
600   MOVE mappos(random,1)+30,mappos(ran
dom,2)+30
610   TAG:PRINT CHR$(143);:TAGOFF
620   RETURN
630  'Enter answer
640   LOCATE 20,25:PRINT "Which County is
 it ? ";
650   i=1:answer$=""
660   z$=INKEY$:IF z$=""THEN 660
670   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
680   IF z$=CHR$(13) THEN RETURN
690  IF Z$=CHR$(127) AND LEN(answer$)>0 T
HEN answer$=LEFT$(answer$,LEN(answer$)-1
):PRINT CHR$(8);" ";CHR$(8);
700   IF z$<"A" OR z$>"Z" THEN 660
710   answer$=answer$+z$:PRINT z$;:GOTO 6
60
720  'Ckeck Answer
730   IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN GOSUB 750 ELSE GOSUB 810
740   RETURN
750  'Correct
760   LOCATE 32,24:PRINT "C O R R E C T !
"
770     FOR i=1 TO 1500
780     NEXT i
790   score=score+1:tries=tries+1
800   RETURN
810  'Wrong
820   LOCATE 32,24:PRINT "W R O N G !"
830    FOR i=1 TO 1500
840    NEXT i
850   tries=tries+1
860   LOCATE 32,24:PRINT "              "
870   LOCATE 20,22:PRINT "
"
```

```
880   GOSUB 440
890   RETURN
900  'Draw Map of Scotland
910   MODE 2:INK 1,0:INK 0,13:BORDER 13:C
LS
920  MOVE 100,100
930   READ x,y
940   IF x=0 AND y=0 THEN 980
950  IF x>150 THEN PLOT x/2,y/3:GOTO 970
960  DRAWR x/2,y/3
970   GOTO 930
980   RETURN
```

2

Village


```
              YEAR:  1

POPULATION:  100   WHEAT:  113


♠♠♠♠♠♠♠♠♠♠      ⌂⌂⌂         ■ ■ ■ ■ ■ ■ ■ ■ ■
              ⌂    ⌂       ■
             ⌂  ☺  ⌂
              ⌂    ⌂
               ⌂⌂⌂


29 of your people have died of
  starvation!
```
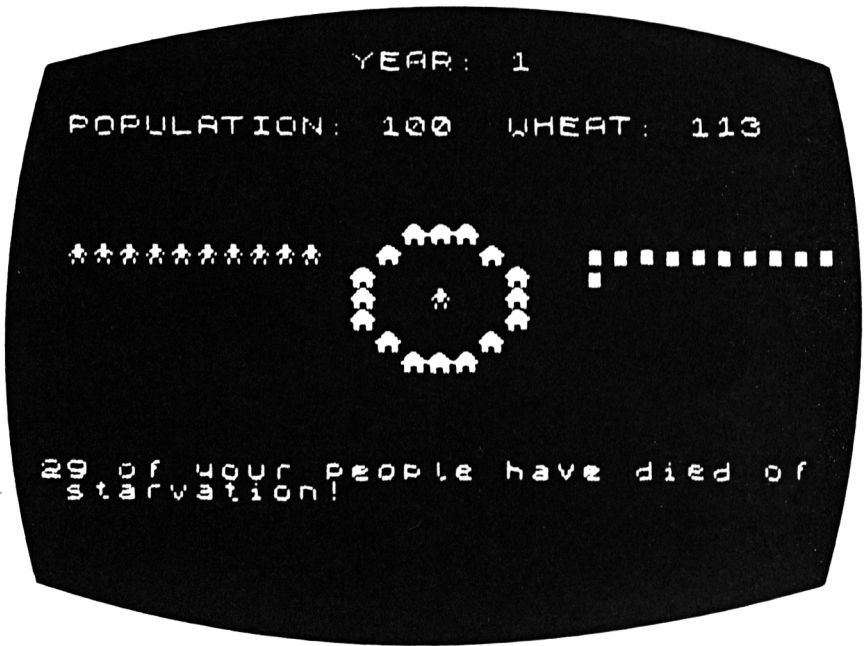
You have just been appointed the chief of a village of natives whose lives depend on their crops of wheat. If you manage the crops properly then the village will prosper and the population will increase but should you make a mistake then people will starve, people will die and you will be attacked by an angry mob.

By the way, your people need about 2½ bags of wheat each to survive for a year. Give them less and they starve and they won't like that. If you give them 5 bags each they will be pleased and may forgive you for past mistakes.

Look out as well for the rats which always attack your crops in the warehouse. The more you store, the greater will be the losses from rats.

How to play

The screen will show you that you are in your first year as leader. You will begin with a certain population and a certain amount of wheat. There are symbols for people and sacks of wheat and each symbol represents ten units. The computer will ask you how much of your wheat you wish to sow. Remember to keep some back as it might be a bad harvest.

The computer will then tell you how much wheat you have grown and you will be asked how much you wish to give your people.

Try and survive ten years as leader.

Program

```
10 REM Village
20 MODE 1:BORDER 13
30 GOSUB 870
40 DIM QUALITY$(3)
50 QUALITY$(1)="poor":QUALITY$(2)="fair"
:QUALITY$(3)="good"
60 STARVE=0:POP=100:WHEAT=250:YEAR=1
70 ANGER=0:ATITE=2.4
80 CLS
90 LOCATE 1,1:PEN 2:PRINT"VILLAGE":PEN 1
100 GOSUB 930
110 GOSUB 1030
120 GOSUB 1130
130 REM LOOP
140 GOSUB 1250
150 HARVEST=INT(RND(1)*3+1)
160 MESS$="The witch-doctor predicts a "
+QUALITY$(HARVEST)+" harvest":GOSUB 1350
170 REM LOOP
180 LOCATE 1,21:PRINT SPACE$(80)
190 LOCATE 1,21:PRINT"How much seed will
 you sow ?";
200 GOSUB 780
210 SEED=VAL(TEMP1$)
220 IF SEED>WHEAT THEN MESS$="You do not
 have "+STR$(seed)+CHR$(13)+CHR$(10)+"ba
gs of wheat !":GOSUB 1350
```

```
230 IF SEED>POP THEN MESS$="You do not h
ave enough people to sow "+STR$(seed)+"
bags !":GOSUB 1350
240 IF SEED<0 OR SEED>WHEAT OR SEED>POP
THEN GOTO 170
250 CROP=INT(RND(1)*2*HARVEST*SEED)
260 WHEAT=WHEAT-SEED
270 GOSUB 1250:GOSUB 1030
280 FOR I=1 TO 3000:NEXT I
290 MESS$="Your crop was "+STR$(CROP)+CH
R$(13)+CHR$(10)+"bags of wheat":GOSUB 13
50
300 IF HARVEST<>1 AND CROP<1.5*SEED THEN
 MESS$="Even witch-doctors can be wrong
!":GOSUB 1350
310 wheat=WHEAT+CROP
320 GOSUB 1250:GOSUB 1030
330 FOR I=1 TO 3000:NEXT I
340 REM LOOP
350 LOCATE 1,21:PRINT"How much wheat wil
l you give to the people ?";
360 GOSUB 780
370 EAT=VAL(TEMP1$)
380 IF EAT>WHEAT THEN MESS$="You do not
have "+STR$(eat)+" bags !":GOSUB 1350
390 IF eat<0 OR eat>wheat THEN GOTO 340
400 IF eat<pop*ATITE THEN MESS$="Your pe
ople are hungry !":GOSUB 1350:STARVE=1
410 IF EAT>POP*ATITE*2 THEN MESS$="Your
people are happy !":GOSUB 1350:ANG=ANG-1
420 WHEAT=WHEAT-EAT
430 GOSUB 1250:GOSUB 1030
440 FOR J=3 TO 7
450 FOR K=11 TO 17
460 LOCATE J,K:PRINT CHR$(227);
470 SOUND 1,200,1
480 FOR I=1 TO 30:NEXT I
490 LOCATE J,K:PRINT" ";
500 NEXT K
510 FOR I=1 TO 500:NEXT I
520 NEXT J
530 RATS=INT(RND(1)*WHEAT/4):IF RATS=0 T
HEN GOTO 560
540 MESS$="Rats ate "+STR$(RATS)+CHR$(13
)+CHR$(10)+"bags of wheat !":GOSUB 1350
550 wheat=wheat-rats
```

```
560 GOSUB 1250:GOSUB 1030
570 IF starve=0 THEN GOSUB 1430:GOTO 670
580 died=INT(RND(1)*0.5*(pop*atite-eat))
+1
590 IF died>pop THEN died=pop-1
600 mess$=STR$(died)+" of your people"+C
HR$(13)+CHR$(10)+"have died of starvatio
n":GOSUB 1350
610 pop=pop-died
620 GOSUB 1250:GOSUB 930
630 mess$="Your people are angry !":GOSU
B 1350
640 ang=ang+1
650 IF ang=3 THEN mess$="You have let to
o many starve. Your people want a new le
ader !":GOSUB 1350:GOTO 750
660 times=2:GOSUB 1530
670 GOSUB 1250:GOSUB 930
680 starve=0:year=year+1
690 mess$="Another year has passed":GOSU
B 1350
700 IF year<>11 THEN GOTO 130
710 LOCATE 1,21:PRINT SPACE$(80):LOCATE
1,21:PRINT"Well Done !!!":PRINT:PRINT"Yo
u have completed your 10 years in office
"
720 PEN 2:PRINT:PRINT"YOUR SCORE IS :";I
NT((POP+WHEAT/ATITE)*10)
725 PEN 1
730 GOSUB 1480:IF FLAG=1 THEN GOTO 60
740 END
750 TIMES=10:GOSUB 1530
760 GOTO 730
780 REM
790 TEMP$="":TEMP1$=""
800 REM LOOP
810 TEMP$=INKEY$
820 temp$=UPPER$(temp$)
830 IF temp$>=" " AND temp$<="Z" AND LEN
(TEMP1$)<20 THEN TEMP1$=TEMP1$+TEMP$:PRI
NT TEMP$;
840 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT TEMP$;
850 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 800
```

```
860 RETURN
870 REM
875 SYMBOL AFTER 224
880 SYMBOL 224,26,60,126,255,126,102,102
,102
890 SYMBOL 225,24,24,60,90,24,36,36,102
900 SYMBOL 226,0,0,60,60,60,60,60,0
910 SYMBOL 227,28,18,57,57,56,56,56,16
920 RETURN
930 REM
940 PEN 2
950 POP$=CHR$(225)
960 FOR J=2 TO 8
970 FOR K=0 TO 9
980 IF POP<(K+1)*10+(J-2)*100 THEN POP$=
" "
990 LOCATE K+1,J+1:PRINT POP$;
1000 NEXT K:NEXT J
1010 PEN 1
1020 RETURN
1030 REM
1040 PEN 3
1050 WHEAT$=CHR$(226)
1060 FOR J=10 TO 16
1070 FOR K=0 TO 9
1080 IF WHEAT<(K+1)*10+(J-10)*100 THEN W
HEAT$=" "
1090 LOCATE K+1,J+1:PRINT WHEAT$;
1100 NEXT K:NEXT J
1110 PEN 1
1120 RETURN
1130 REM
1140 LOCATE 15,9:PRINT STRING$(3,CHR$(22
4))
1150 LOCATE 14,10:PRINT CHR$(224);"   ";
CHR$(224);
1160 FOR I=11 TO 14
1170 LOCATE 13,I:PRINT CHR$(224);"     "
;CHR$(224);
1180 NEXT I
1190 LOCATE 14,14:PRINT CHR$(224);"   ";
CHR$(224);
1200 LOCATE 15,15:PRINT STRING$(3,CHR$(2
24))
1210 PEN 2
1220 LOCATE 16,12:PRINT CHR$(225);
1230 PEN 1
1240 RETURN
1250 REM
```

```
1260 PEN 2
1270 LOCATE 12,3:PRINT"Pop:";pop;"   ";
1290 wheat=INT(wheat+0.5)
1300 PEN 3
1310 LOCATE 12,5:PRINT "Wheat:";wheat;"
 ";
1320 PEN 1
1330 LOCATE 13,1:PRINT"Year:";year
1340 RETURN
1350 REM
1360 PEN INT(RND(1)*2+2)
1370 LOCATE 1,23:PRINT MESS$;
1380 SOUND 1,160+INT(RND(1)*6)*10,80
1390 FOR I=1 TO 6000:NEXT I
1400 LOCATE 1,23:PRINT SPACE$(79);
1410 PEN 1
1420 RETURN
1430 REM
1440 JOINED=INT(RND(1)*WHEAT*0.5*ATITE)+
1
1450 MESS$=STR$(JOINED)+" people joined"
+CHR$(13)+CHR$(10)+"your village!":GOSUB
 1350
1460 pop=pop+joined
1470 RETURN
1480 REM
1490 LOCATE 1,22:PRINT"ANOTHER GO ?";
1500 temp$=INKEY$
1505 IF temp$="" THEN GOTO 1500
1510 FLAG=1:IF TEMP$="N" OR TEMP$="n" TH
EN flag=0
1520 RETURN
1530 REM
1540 PEN 2
1550 FOR k=1 TO times
1560 FOR j=1 TO pop/10
1570 IF j>10 THEN GOTO 1650
1580 LOCATE j,3:PRINT " ";
1590 LOCATE j,2:PRINT CHR$(225);
1600 SOUND 1,40,20
1610 FOR i=1 TO 100:NEXT i
1620 LOCATE j,2:PRINT " ";
1630 LOCATE j,3:PRINT CHR$(225);
1640 FOR i=1 TO 500:NEXT i
1650 NEXT j:NEXT k
1660 PEN 1
1670 RETURN
```

3

Multiplication and Division

```
       SUMS:  8          SCORE:  6

   8406    25 = 210200
   286 X 56 = 16016
   5879 X 16 = 94064
   8719 X 84 = 732296          732396
   3145 X 39 = 122655
   7133 X 61 = 435113
   6092 X 94 = 566726          572648
   1584 X 36 = 60192
   7440 X 17 =
```
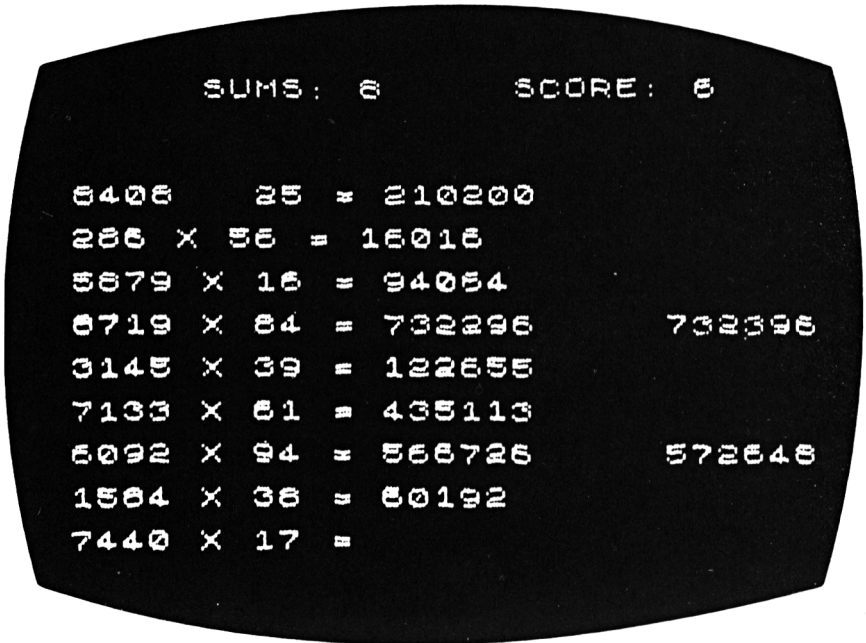
The first thing you have to do before you begin to play this brain teaser is to put your calculators away in a cupboard and bring out your pencils and paper. This game is a test of your mental ability and agility. No cheating, now, by using any help.

How to play

Your computer will begin by asking you if you wish to play multiplication or division.

Type M or D then press ENTER

You will then be given a simple multiplication question such as 1436 x 26.

If you are correct, you will hear a triumphant sound and the computer will show the word Correct.

If you are wrong, you will hear a rather nasty noise and the screen will display the word WRONG.

The program will run for a total of twenty sums and will then give your grand total of correct answers against attempts.

If you wish to change from one type of sum to another you can wait until you have answered your twenty questions then press RUN.

Program

```
1  'MULTIPLICATION AND DIVISION
2  'COPYRIGHT KEY 1984 BY VINCE APPS
3  'AMSTRAD CPC 464 VERSION BY R.P.JONES
10   GOSUB 280
20   score=0:sums=0:RANDOMIZE TIME
30   LOCATE 2,5: PRINT "Do you want to Mu
ltiply or Divide (M/D)?"
40   z$=INKEY$:IF z$=""THEN 40
50   z$=UPPER$(z$)
60   IF z$="M" THEN sign$="x":GOSUB 180 E
LSE IF z$="D" THEN sign$=CHR$(172):GOSUB
  230:ELSE GOTO 40
70   GOSUB 280
80   GOSUB 340
90   GOSUB 390
100   GOSUB 430
110   IF LEN(answer$)>6 THEN result=0 ELS
E IF VAL(answer$)=total THEN result=-1 E
LSE result=0
120   ON result+2 GOSUB 500,560
130   PRINT #1,CHR$(13)
140   GOSUB 340
150   IF sums=20 THEN 610
160   IF SIGN$="x" THEN GOSUB 180 ELSE GO
SUB 230
170   GOTO 90
180   'Multiplication
190   random1=INT(RND*9999)
200   random2=INT(RND*100)
```

```
210   total=random1*random2
220   RETURN
230  'Division
240   total=INT(RND*100)
250   random2=INT(RND*100)
260   random1=total*random2
270   RETURN
280  'Clear and Title Screen
290   MODE 1:INK 0,1:INK 1,6:BORDER 24
300   LOCATE 10,2:PRINT "Multiply and Div
ide"
310   LOCATE 10,3:PRINT STRING$(19,208)
320   WINDOW #1,1,40,8,24
330   RETURN
340  'Scoring Routine
350   LOCATE 5,5:PRINT "Score : ";score
360   LOCATE 25,5:PRINT "sums : ";sums
370   LOCATE 1,7:PRINT STRING$(40,208)
380   RETURN
390  'Print the Sum
400   PRINT #1,USING "      #### & ###   &
";random1,sign$,random2,"=";
410   xp=POS(#1):yp=VPOS(#1)
420   RETURN
430  'Enter the answer
440   answer$="":LOCATE xp,yp+7
450   z$=INKEY$:IF z$=""THEN 450
460   IF z$=CHR$(13) THEN RETURN
470   IF z$<"0" OR z$>"9" THEN 450
480   answer$=answer$+z$:PRINT z$;
490   GOTO 450
500  'Correct Answer
510   xp=POS(#1):yp=VPOS(#1)
520   LOCATE xp+5,yp+7:PRINT #1,"CORRECT"
;
530   sums=sums+1:score=score+1
540   GOSUB 680
550   RETURN
560  'Wrong Answer
570   LOCATE 30,yp+7:PRINT #1,"WRONG";"
";total;
580   sums=sums+1
590   GOSUB 700
600   RETURN
610  'Summary of Results
620   CLS #1
```

```
630   PRINT #1,"  Out of 20 sums you had
";score;" correct answers."
640   PRINT #1," ":PRINT #1,"  A percenta
ge rating of ";ROUND(100*score/20,1);" %
";
650   PRINT#1," ":PRINT #1,"TO END PRESS
ENTER. FOR ANOTHER GO PRESS SPACE"
660   Z$=INKEY$:IF Z$=""THEN 660
670   IF Z$=CHR$(32) THEN 1 ELSE IF Z$=CH
R$(13) THEN STOP ELSE GOTO 660
680 FOR i=250 TO 1 STEP -5:SOUND 1,i,1,7
:NEXT i
690 RETURN
700 FOR i=500 TO 750 STEP 5:SOUND 1,i,1,
7:NEXT i
710 RETURN
```

4

Addition and Subtraction
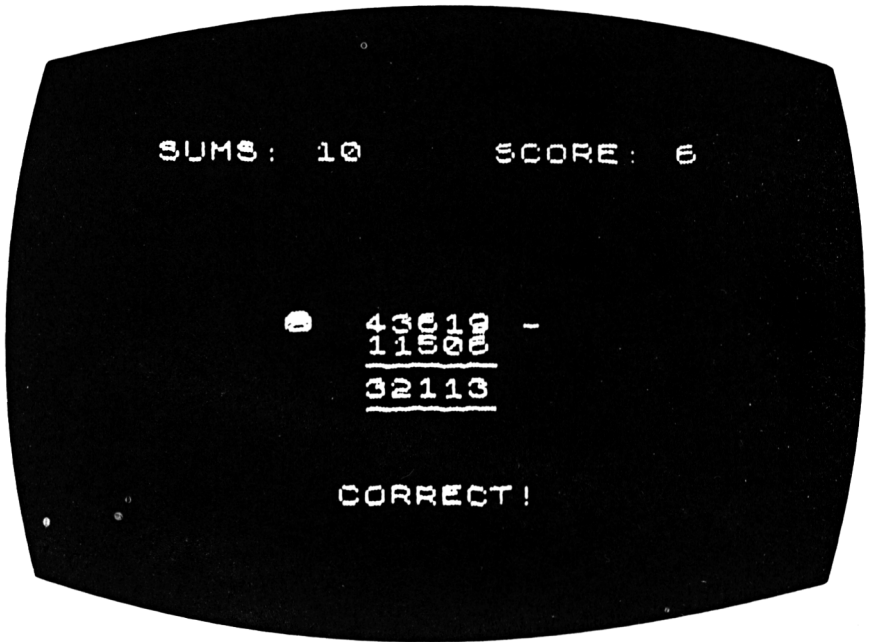
When you cover other sums programs in this book you will find that we recommend that you don't use pencils, paper or calculators because you probably won't have them the next time you are sent out to shop for your parents. It helps to be able to do your own sums in your head because it might save you having to go back to the shops because you didn't have enough money the first time you went.

How to play

We have made this game look just like it would on your school papers. You even fill in the totals by putting the numbers in from right to left just like you do in your maths books. When you have entered your line press ENTER.

Program

```
  1 'ADDITION AND SUBTRACTION
 10   GOSUB 240
 20   score=0:sums=0:RANDOMIZE TIME
 30   GOSUB 190
 40   GOSUB 300
 50   GOSUB 350
 60   GOSUB 430
 70   temp$=answer$
 80     FOR i=1 TO LEN(answer$)
 90       MID$(answer$,LEN(answer$)+1-i,1)=
MID$(temp$,i,1)
100     NEXT I
110   IF LEN(answer$)>5 THEN result=0 ELS
E IF VAL(answer$)=total THEN result=-1 E
LSE result=0
120   ON result+2 GOSUB 540,590
130   PRINT #1,CHR$(13)
140   GOSUB 300
150   IF sums=20 THEN 650
160   CLS#1
170   GOSUB 190
180   GOTO 50
190 'Generate Random Numbers
200   random1=INT(RND*49999)
210   random2=INT(RND*49999)
220   IF random1>random2 THEN sign$="-":t
otal = random1-random2:RETURN
230   sign$="+":total=random1+random2:RET
URN
240 'Clear and Title Screen
250   MODE 1:INK 0,1:INK 1,6:BORDER 24
260   LOCATE 8,2:PRINT "Addition and Subt
raction"
270   LOCATE 8,3:PRINT STRING$(24,208)
280   WINDOW #1,1,40,8,24
290   RETURN
300 'Scoring Routine
310   LOCATE 5,5:PRINT "Score : ";score
320   LOCATE 25,5:PRINT "sums : ";sums
330   LOCATE 1,7:PRINT STRING$(40,208)
340   RETURN
350 'Print the Sum
360   PRINT #1,USING "                ###
##   &";random1,sign$
370   PRINT #1
```

```
380  PRINT #1,USING "                    ###
##  &";random2," "
390  PRINT #1
400  LOCATE #1,17,4:PRINT #1,STRING$(5,21C
410  xp=POS(#1):yp=VPOS(#1)
420  RETURN
430  'Enter the answer
440  count=1
450  answer$=""
460  z=21
470  LOCATE #1,z,6
480  z$=INKEY$:IF z$=""THEN 480
490  IF z$=CHR$(13) THEN RETURN
500  IF z$<"0" OR z$>"9" THEN 480
510  answer$=answer$+z$:PRINT #1,z$;
520  z=z-1
530  GOTO 470
540  'Correct Answer
550  LOCATE #1,16,10:PRINT #1,"CORRECT";
560  sums=sums+1:score=score+1
570  GOSUB 730
580  RETURN
590  'Wrong Answer
600  LOCATE #1,17,10:PRINT #1,"WRONG";"
  ";total
610  sums=sums+1
620  GOSUB 750
630  FOR i=1 TO 2000:NEXT i
640  RETURN
650  'Summary of Results
660  CLS #1
670  PRINT #1," Out of 20 sums you had
";score;" correct answers."
680  PRINT #1," ":PRINT #1,"  A percenta
ge rating of ";ROUND(100*score/20,1);" % "
690  PRINT #1
700  PRINT#1," ":PRINT #1,"TO END PRESS
ENTER. FOR ANOTHER GO PRESS SPACE"
710  Z$=INKEY$:IF Z$=""THEN 710
720  IF Z$=CHR$(32) THEN 1 ELSE IF Z$=CH
R$(13) THEN STOP ELSE GOTO 710
730  FOR i=250 TO 1 STEP -5:SOUND 1,i,1,
7:NEXT i
740  RETURN
750  FOR i=500 TO 750 STEP 5:SOUND 1,i,1
,7:NEXT i
760  RETURN
```

5

Sum Difference

```
        SCORE: 0        HI SCORE: 0




I AM THINKING OF TWO NUMBERS
BETWEEN 1 AND 20
THE SUM OF THE NUMBERS IS 27
THE DIFFERENCE IS 3
```

We thought about calling this game 'some difference' as it isn't nearly as easy as it looks at first.

You are being told by your computer that it is thinking of two numbers between 1 and 20. It will tell you the total sum and the **difference** between the two numbers. All you have to do is correctly guess the answer.

Example: The sum of the numbers is 13
        The difference is 9
        What are the numbers?
        Answer 2 and 11

Simple isn't it?

How to play

Your computer will tell you the sum of the numbers it is thinking of and the difference and ask for your answers.

After each number press ENTER.

If you are correct the score increases on the top of the board.

As you become better at this game the computer will move the range of numbers from 1 - 20 to 1 - 25 and so on.

A wrong answer will end the game completely and you will be asked if you wish to compete again. High scores will be recorded on the screen to allow you to compete for the high score title.

Program

```
1  'SUM DIFFERENCE
2  'COPYRIGHT KEY 1984 BY VINCE APPS
3  'AMSTRAD CPC 464 VERSION BY R.P.JONES
10    GOSUB 320
20    score=0:top=0:RANDOMIZE TIME
30    LIMIT=20:GOSUB 260
40    GOSUB 380
50    GOSUB 430
60    LOCATE #1,10,12:PRINT #1,"First Numb
er ";
70    z1=12
80    GOSUB 550
90    res1$=answer$
100   LOCATE #1,10,14:PRINT #1,"Second Nu
mber ";
110   z1=14
120   GOSUB 550
130   res2$=answer$
140   IF LEN(res1$)>2 OR  LEN(res2$)>2 TH
EN result=0:GOTO 180
150   IF VAL(res1$)=random1 AND VAL(res2$
)=random2 THEN result=-1:GOTO 180
160   IF VAL(res1$)=random2 AND VAL(res2$
)=random1 THEN result=-1:GOTO 180
170   result=0
180   ON result+2 GOSUB 640,690
```

```
190    PRINT #1,CHR$(13)
200    IF result=0 THEN top=MAX(score,top)
:score=0:CLS#1:GOSUB 320:GOTO 30
210    GOSUB 380
220    CLS#1
230    LIMIT=LIMIT+2:IF LIMIT>98 THEN LIMI
T=98
240    GOSUB 260
250    GOTO 50
260   'Generate Random Numbers
270    random1=INT(RND*LIMIT)
280    random2=INT(RND*LIMIT)
290    IF RANDOM1=RANDOM2 THEN 280
300    SUM=RANDOM1+RANDOM2:DIFF=ABS(RANDOM
1-RANDOM2)
310    RETURN
320   'Clear and Title Screen
330    MODE 1:INK 0,1:INK 1,6:BORDER 24
340    LOCATE 8,2:PRINT "Addition and Subt
raction"
350    LOCATE 8,3:PRINT STRING$(24,208)
360    WINDOW #1,1,40,8,24
370    RETURN
380   'Scoring Routine
390    LOCATE 5,5:PRINT "Score : ";score
400    LOCATE 25,5:PRINT "Hi Score : ";top

410    LOCATE 1,7:PRINT STRING$(40,208)
420    RETURN
430   'Print the Sum
440    LOCATE #1,6,2
450    PRINT #1,"I am thinking of two numb
ers"
460    LOCATE #1,12,3
470    PRINT #1,"Between 1 and ";LIMIT;"."
480    LOCATE #1,6,6
490    PRINT #1,"The SUM of the numbers is
 ";SUM
500    LOCATE #1,10,7
510    PRINT #1,"The Difference is ";DIFF
520    LOCATE #1,2,10
530    PRINT #1,"ENTER YOUR ANSWERS SEPARA
TED BY 'ENTER'"
540    RETURN
550   'Enter the answer
560    count=1
```

```
570    answer$=""
580    LOCATE #1,28,z1
590    z$=INKEY$:IF z$=""THEN 590
600    IF z$=CHR$(13) THEN RETURN
610    IF z$<"0" OR z$>"9" THEN 590
620    answer$=answer$+z$:PRINT #1,z$;
630    GOTO 590
640    'Correct Answer
650    LOCATE #1,16,16:PRINT #1,"CORRECT";
660    sums=sums+1:score=score+1
670    GOSUB 750
680    RETURN
690    'Wrong Answer
700    LOCATE #1,10,16:PRINT #1,"WRONG";"
  ";random1;" & ";random2
710    sums=sums+1
720    GOSUB 770
730    FOR i=1 TO 2000:NEXT i
740    RETURN
750    FOR i=250 TO 1 STEP -5:SOUND 1,i,1,
7:NEXT i
760    RETURN
770    FOR i=500 TO 750 STEP 5:SOUND 1,i,1
,7:NEXT i
780    RETURN
```

6

Bar Chart
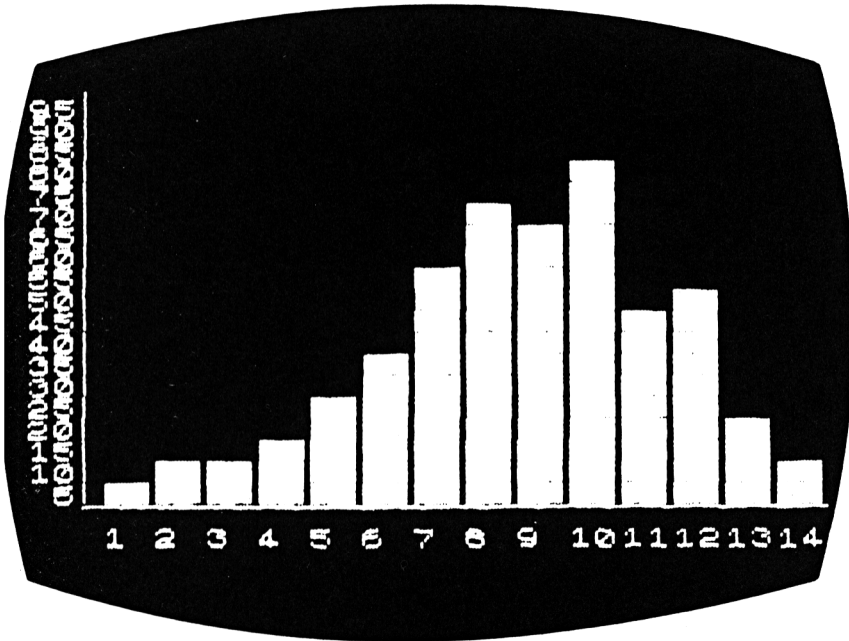
If you are planning to keep a record of how tall you have grown, or the height of a plant, or the rainfall in your garden, or the temperature changes, or how much pocket money you have been spending on sweets, toys or even computer games then this is for you.

How to play

Your computer will show you an upright (perpendicular) line and a base (horizontal) line and will ask you first to decide the values you wish to use. This means that you have to decide if you want the chart to rise two, five or even ten units at a time.

You will be asked for the minimum and maximum value of the chart. You will also be asked to label the axis of the chart. You

have 15 items so you may choose whether to work on days, months or any period of your choice. For example, if the temperature on the first day had been 24 Centigrade then you type in 24, and for the next day, 22, and so on. At the end of two weeks you will have finished 14 numbers and will see the high and low temperatures for the period covered.

Program

```
10 REM BAR CHART
20 MODE 1
30 BORDER 13
40 DIM VLUE(15)
50 CLS:GOSUB 850
60 REM LOOP
70 LOCATE 1,7:PRINT"How many items (1-15
) ?";
80 GOSUB 760
90 vlue=VAL(temp1$)
100 IF vlue<1 OR vlue>15 THEN GOTO 60
110 REM loops
120 LOCATE 1,10:PRINT"Minimum value ?";
130 GOSUB 760
140 mn=VAL(temp1$)
150 IF mn>9999 OR mn<-999 THEN GOTO 110
160 REM loop
170 LOCATE 1,13:PRINT"Maximum value ?";
180 GOSUB 760
190 mx=VAL(temp1$)
200 IF mx>9999 OR mx<-999 THEN GOTO 160
210 IF mn=mx THEN GOTO 110
220 IF mn>mx THEN temp=MX:MX=MN:MN=TEMP
230 LSCALE=MX-MN
240 STP=LSCALE/15
250 REM LOOP
260 LOCATE 1,16:PRINT"Label for X axis ?
";
270 GOSUB 760
280 IF LEN(TEMP1$)>9 THEN LOCATE 1,16:PR
INT"Too long ";CHR$(18):FOR i=1 TO 3000:
NEXT i
290 IF LEN(temp1$)>9 THEN GOTO 250
300 x$=temp1$
310 REM loop
```

```
320 LOCATE 1,19:PRINT"Label for Y axis ?
";
330 GOSUB 760
340 IF LEN(temp1$)>9 THEN LOCATE 1,19:PR
INT"Too long";CHR$(18):FOR i=1 TO 3000:N
EXT i
350 IF LEN(temp1$)>9 THEN GOTO 310
360 y$=temp1$
370 FOR i=1 TO vlue
380 CLS:GOSUB 850
390 REM loop
400 LOCATE 1,11:PRINT"What value for ite
m number ";i;CHR$(18);CHR$(18);CHR$(18)
410 LOCATE 1,16:PRINT "?";
420 GOSUB 760
430 vlue(i)=VAL(temp1$)
440 IF vlue(i)<mn OR vlue(i)>mx THEN LOC
ATE 1,16:PRINT"Outside limits":FOR j=1 T
O 3000:NEXT j
450 IF vlue(i)<mn OR vlue(i)>mx THEN GOT
O 390
460 vlue(i)=INT(vlue(i)/stp)
470 NEXT i
480 LOCATE 1,21:PRINT"Press a key for ch
art"
490 IF INKEY$<>"" THEN GOTO 490
500 IF INKEY$="" THEN GOTO 500
510 CLS:GOSUB 850
520 LOCATE 11,23:PRINT x$
530 WINDOW 1,1,5,25
540 FOR i=1 TO LEN(y$):PRINT MID$(y$,i,1
);:NEXT i
550 WINDOW 1,40,1,25
560 LOCATE 1,4:PRINT mx
570 LOCATE 1,19:PRINT mn
580 FOR i=4 TO 19:LOCATE 6,i:PRINT "I":N
EXT i
590 LOCATE 6,20:PRINT "#";STRING$(30,"="
);
600 FOR i=1 TO vlue
610 temp$=STR$(i):IF LEN(temp$)=1 THEN t
emp$=temp$+" "
620 LOCATE 6+i*2,21:PRINT LEFT$(temp$,1)
630 LOCATE 6+i*2,22:PRINT RIGHT$(temp$,1
)
640 NEXT i
```

```
650 FOR i=1 TO vlue
660 FOR j=1 TO vlue(i) STEP 3
670 LOCATE 6+i*2,20-j/3:PRINT "+";
680 NEXT j
690 LOCATE 7+i*2,21-j/3
700 PRINT "-"
710 NEXT i
720 LOCATE 16,1:PRINT"press <SPACE> to e
nd"
730 IF INKEY$=" " THEN GOTO 730
740 IF INKEY$<>" " THEN GOTO 740
750 CLS:END
760 REM
770 temp$="":temp1$=""
780 REM loop
790 temp$=INKEY$:IF temp$="" THEN GOTO 7
90
800 temp$=UPPER$(temp$)
810 IF temp$>=" " AND temp$<="Z" AND LEN
(temp1$)<20 THEN temp1$=temp1$+temp$:PRI
NT temp$;
820 IF temp$=CHR$(127) AND LEN(temp1$)>0
 THEN temp1$=LEFT$(temp1$,LEN(temp1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
830 IF temp$<>CHR$(13) OR LEN(temp1$)=0
THEN GOTO 780
840 RETURN
850 REM
860 LOCATE 1,2:PRINT"Bar Chart"
870 LOCATE 1,3:PRINT"========="
880 RETURN
```

7

Masterbrain

```
        WINS: 0          GAMES: 0


     COLOURS:
     ■ MAGENTA   (3)
     ■ GREEN    (4)
     ■ CYAN    (5)
     ■ YELLOW    (6)


  GUESS NO.1  ■ ■ ■ ■   ▮ ▮
  GUESS NO.2  ■ ■ ■ ■   ▮ ▮
```
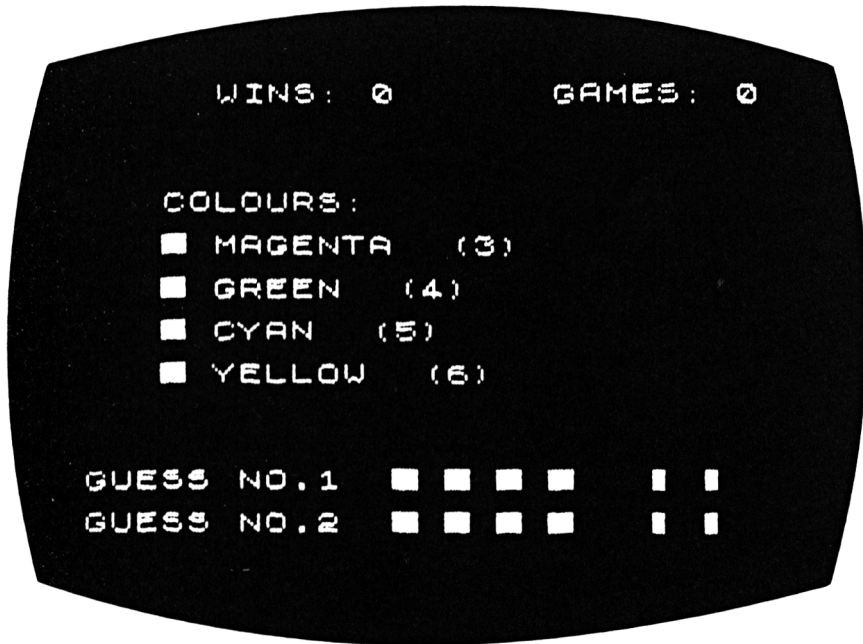
This is one of the most difficult programs in the book in our opinion as you have to really think about every move you make.

Your computer will choose four lettered pegs and place them in four positions in its memory.

You have to guess what the letters are, how many of each letter and in fact what order the computer has placed them.

You could be sitting here for days so you had better get a biscuit and a drink before you start.

How to play

At the beginning you will be asked your age as the game has

different levels of difficulty. You could cheat to begin with and say you are only five years old - it might make things easier.

The letters used are:

<div align="center">A, B, C and D</div>

You are asked for your first guess and you enter your choice and press ENTER.

When you have entered your guesses the computer will show you a "*" if you are in the right place and with the right lettered peg. If you are right with your letter guess but in the wrong column you will get a "–". If you are wrong with letter and column nothing will appear on the screen.

Now you may know that your first guess of letters is half right you have to go on to find out which column the letters are really in.

If at any stage you want to give up, type 'escape' as your guess.

Program

```
1 'Masterbrain
2 'Copyright (c) 1984 Vince Apps
3 'Amstrad CPC 464 version by R.P.Jones
10   GOSUB 350
20   GOSUB 240
30   GOSUB 310
40   GOSUB 390
50   age=VAL(answer$)
60   IF age>100 THEN LOCATE #3,3,2:PEN #3
,2:PRINT #3,"P U L L    T H E    O T H E R
     O N E  !":FOR i=1 TO 1500:NEXT i:CLS
#2:CLS #3:GO
TO 40
70     FOR i=1 TO 1500:NEXT i
80   maximum=28-age
90   IF age>18 THEN maximum=10
100   IF age<8 THEN maximum=20
110   GOSUB 910
```

```
120   CLS #2:LOCATE #2,14,4:PRINT #2,CHR$
(143)+"   "+CHR$(143)+"   "+CHR$(143)+"   "
+CHR$(143)
130   GOSUB 520
140   GOSUB 700
150   tries=tries+1:a1=0:a2=0
160     FOR i=1 TO 4
170       IF MID$(result$,i,1)="*" THEN a1
=a1+1
180       IF MID$(result$,i,1)="-" THEN a2
=a2+1
190     NEXT i
200   GOSUB 310
210   IF flag THEN 970
220   IF tries <maximum THEN 130 ELSE 640
230 GOTO 230
240 'Clear & Title Screen
250   MODE 1:BORDER 6
260   WINDOW #1,1,40,1,7:WINDOW #2,1,40,8
,16:WINDOW #3,12,40,17,25:WINDOW #4,1,11
,17,25
270   LOCATE #1,9,2:PRINT #1,"M A S T E R
  B R A I N"
280   LOCATE #1,9,3:PRINT #1,STRING$(21,2
08)
290   PAPER #2,2:CLS #2:PAPER #3,3:CLS #3
300   RETURN
310 'Score Routine
320   LOCATE #1,2,5:PRINT #1,"*   :   ";a1:
LOCATE #1,30,5:PRINT #1,"-   :   ";a2
330   LOCATE #1,15,6:PRINT #1,"Tries   :
";tries
340   RETURN
350 'Initialise
360   INK 2,24:INK 3,2
370   a1=0:a2=0:tries=0
380   RETURN
390 'Set difficulty level
400   PEN #2,3:LOCATE #2,9,3:PRINT #2,"Ho
w old are you ? ";
410   answer$=""
420   z$=INKEY$:IF z$="" THEN 420
430   IF z$=CHR$(13) AND LEN(answer$)>0 T
HEN RETURN
440   IF z$<"0" OR z$>"9" THEN 420
```

```
450    PRINT #2,z$;:answer$=answer$+z$
460    GOTO 420
470  'Score Routine
480    LOCATE #1,5,5:PRINT #1,"Tries   :    "
;tries
490    LOCATE #1,25,5:PRINT #1,"Score   :
";score
500    LOCATE #1,8,7:PRINT #1,"Number in s
equence   :   ";number
510    RETURN
520  'Enter answer
530    CLS#3:PEN #3,2:LOCATE #3,6,2:PRINT
#3,"Guess the sequence"
540    LOCATE #3,6,4
550    check$=""
560       FOR i=1 TO 4
570        z$=INKEY$:IF z$="" THEN 570
580        z$=UPPER$(z$)
590        IF z$<"A" OR z$>"D" THEN 570
600        check$=check$+z$
610        PRINT #3,z$;" ";
620       NEXT i
630    RETURN
640  'Done
650    CLS #3:LOCATE #3,3,2:PRINT #3,"The
answer is ";:FOR i=1 TO 4:PRINT #3,MID$(
sequence$,i,1);" ";:NEXT i
660    CLS#2
670    LOCATE #2,5,5:PRINT #2,"A N O T H E
R   G O   ?   (Y / N)";
680    z$=INKEY$:IF z$=""THEN 680 ELSE z$=
UPPER$(z$)
690    IF z$="Y" THEN 10 ELSE END
700  'Check Answer
710    IF check$=sequence$ THEN flag=-1 EL
SE flag=0
720    result$="9999":copy$=check$:copyseq
$=sequence$
730       FOR i=1 TO 4
740        IF MID$(check$,i,1)=MID$(sequenc
e$,i,1) THEN MID$(result$,i,1)="*":MID$(
copy$,i,1)="0":MID$(copyseq$,i,1)="0"
750       NEXT i
760       FOR i=1 TO 4
770        IF MID$(copy$,i,1)="0" THEN 810
```

```
780     x=INSTR(copyseq$,MID$(copy$,i,1)
)
790     IF x=0 THEN 810
800     MID$(copyseq$,x,1)="0":MID$(resu
lt$,i,1)="--"
810    NEXT i
820    FOR i=1 TO 4
830     LOCATE #2,14,7
840      FOR j=1 TO 4
850       PRINT #2,MID$(result$,j,1);"
";
860      NEXT j
870     PRINT #4,MID$(check$,i,1);" ";
880    NEXT i
890  PRINT #4,CHR$(13)
900  RETURN
910 'Generate sequence
920  sequence$=""
930    FOR i=1 TO 4
940     sequence$=sequence$+CHR$(64+INT(
RND*4)+1)
950    NEXT i
960  RETURN
970 'Success
980  CLS #2:LOCATE #2,9,4:PRINT #2,"W E
L L   D O N E   !"
990    FOR i=1 TO 1500:NEXT i
1000  GOTO 660
```

8

English/French

```
SCORE: 7      QUESTIONS: 9

WHAT IS THE FRENCH WORD
FOR TRAIN        ?

CORRECT!
```
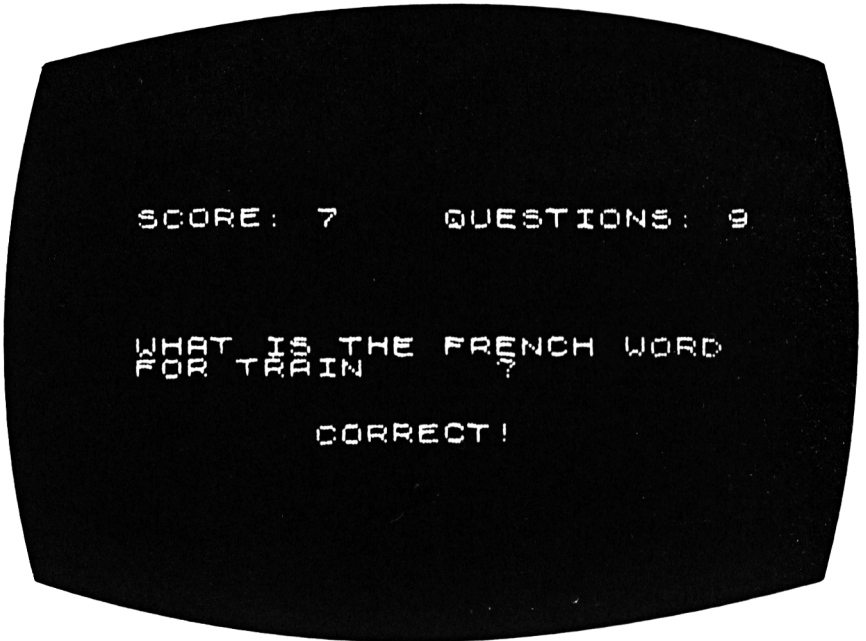
Imagine you have gone on holiday with your family to France and your Mum and Dad can't remember the French for an hotel. You just walk up behind them and say 'It's an auberge, Dad'.

They will probably be so surprised that you could knock them down with a pain (that's French for a loaf of bread, but of course you will know that.)

How to play

The computer will concentrate on nouns but you can change the program later to widen your knowledge.

Always remember when answering in French to use le or la before your word. Your computer will not stop your entry but you should get into the habit of using the prefixes.

Keep going with your answers as, after twenty correct answers, you will get a tasty reward.

Remember to use the ENTER key after your choice of word. You may be asked questions alternately from French to English then English to French.

Programming Hints

Some of the data we have used is very simple so you can change lines 10 onwards to insert your own, or have someone else program, harder examples.

Program

```
1  'ENGLISH/FRENCH
10   DATA TABLE,LA TABLE,CHAIR,LA CHAISE,
DOOR,LA PORTE,HOUSE,LA MAISON
20   DATA DOG,LE CHIEN,CAT,LE CHAT,GARDEN
,LE JARDIN,COAT,LE MANTEAU
30   DATA HAT,LE CHAPEAU,BICYCLE,LA BICYC
LETTE,TRAIN,LE TRAIN
40   DATA STATION,LA GARE,BREAD,LE PAIN,M
ILK, LE LAIT,CUP,LA TASSE
50   DATA APPLE,LA POMME,ROAD,LA RUE,MAP,
LA CARTE,SEA,LA MER,BOAT,LE BATEAU
60   DIM LANGUAGE$(20,2)
70     FOR I=1 TO 20
80       READ LANGUAGE$(I,1),LANGUAGE$(I,2
)
90     NEXT I
100   score=0:ques=0:RANDOMIZE TIME
110   GOSUB 630:GOSUB 690
120   WHILE score<20
130   GOSUB 250
140   ON lang GOSUB 280,350
150   IF answer$=""THEN control=0:GOTO 17
0
160   ON lang GOSUB 420,510
170   ON control+2 GOSUB 830,880
180   GOSUB 690
190   WEND
200   CLS #1:LOCATE #1,10,4
```

```
210  IF score<5 THEN PRINT #1,"You're a
right french onion !!!!":END
220  IF score<10 THEN PRINT #1,"You need
 extra lessons !":END
230  IF score<15 THEN PRINT #1,"Not Bad
at all !!":END
240  PRINT #1,"W E L L   D O N E  !":END
250 'Select Language
260  IF RND>0.5 THEN lang=1 ELSE lang=2
270  RETURN
280 'English to French
290  select=INT(RND*20)+1
300  CLS #1
310  LOCATE #1,6,2:PRINT #1,"What is the
 French word for "
320  LOCATE #1,15,4:PRINT #1,LANGUAGE$(s
elect,lang);" ?"
330  GOSUB 550
340  RETURN
350 'French to English
360  select=INT(RND*20)+1
370  CLS #1
380  LOCATE #1,5,2:PRINT #1,"What is the
 English word for "
390  LOCATE #1,15,4:PRINT #1,LANGUAGE$(s
elect,lang);" ?"
400  GOSUB 550
410  RETURN
420 'English to French - Check
430  control=0
440  IF answer$=LANGUAGE$(select,2) THEN
 control=-1
450  IF control THEN RETURN
460  IF ABS(LEN(answer$)-LEN(LANGUAGE$(s
elect,2)))=3 THEN 480
470  control=0:RETURN
480    z=INSTR(LANGUAGE$(select,2),answ
er$)
490    IF z<>0 THEN control=-1
500  RETURN
510 'French to English - Check
520  control=0
530    IF answer$=LANGUAGE$(select,1) T
HEN control=-1
540  RETURN
550 'Keyin Routine
560  answer$="":LOCATE #1,15,7
570  z$=INKEY$:IF z$=""THEN 570
```

```
580   IF z$=CHR$(13) THEN RETURN
590   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
600   IF z$=" "THEN 620
610   IF z$<"A" OR z$>"Z" THEN 570
620   PRINT #1,z$;:answer$=answer$+z$:GOT
O 570
630  'Clear and Title Screen
640   MODE 1:INK 0,1:INK 1,6:BORDER 24
650   LOCATE 11,2:PRINT "English to Frenc
h"
660   LOCATE 11,3:PRINT STRING$(17,208)
670   WINDOW #1,1,40,8,24
680   RETURN
690  'Scoring Routine
700   LOCATE 5,5:PRINT "Score : ";score
710   LOCATE 25,5:PRINT "Questions ";ques
720   LOCATE 1,7:PRINT STRING$(40,208)
730   RETURN
740  'Enter the answer
750   count=1
760   answer$=""
770   LOCATE #1,28,z1
780   z$=INKEY$:IF z$=""THEN 780
790   IF z$=CHR$(13) THEN RETURN
800   IF z$<"0" OR z$>"9" THEN 780
810   answer$=answer$+z$:PRINT #1,z$;
820   GOTO 780
830  'Correct Answer
840   LOCATE #1,16,16:PRINT #1,"CORRECT";
850   ques=ques+1:score=score+1
860   GOSUB 950
870   RETURN
880  'Wrong Answer
890   IF lang=1 THEN lang=2 ELSE lang=1
900   LOCATE #1,10,16:PRINT #1,"WRONG";"
   ";LANGUAGE$(select,lang)
910   ques=ques+1
920   GOSUB 970
930   FOR i=1 TO 2000:NEXT i
940   RETURN
950   FOR i=250 TO 1 STEP -5:SOUND 1,i,1,
7:NEXT i
960   RETURN
970   FOR i=500 TO 750 STEP 5:SOUND 1,i,1
,7:NEXT i
980   RETURN
```

9

Fizz/Buzz

```
SCORE: 5  HIGH SCORE: 0



1

2

FIZZ

4

BUZZ
```
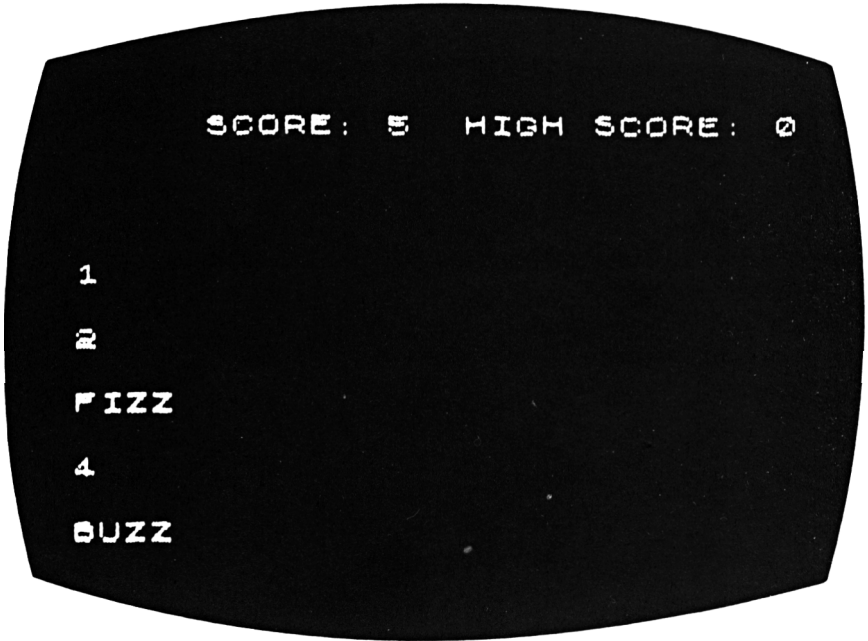
You might have played this at school with everyone in your class making a fool of themselves but now it is up to you alone to get it right or look silly.

Every time a number can be divided by 3 you must press FIZZ and every time it can be divided by 5 you press BUZZ. Remember to press ENTER after each entry.

Example: 1, 2, FIZZ, 4, BUZZ, and so on.

How to play

You type in the numbers and the FIZZES and BUZZES.

If you make a mistake the computer will tell you what you have done wrong and will send you back to the beginning.

At the end your computer will thank you for the game.

Programming Hints

You can easily change the program for numbers other than 3 and 5 if you find you are getting too good for the computer. Why not try 5 and 7?

Program

```
1 'Fizz/Buzz
2 '(c) 1984 BY VINCE APPS
3 'AMSTRAD CPC 464 version by R.P.Jones
10 'Main Routine
20   GOSUB 210
30   CLS #1:CLS#2
40   GOSUB 430
50   control=1
60   GOSUB 470
70   GOSUB 550
80 IF flag THEN control=control+1:score=
score+1:GOSUB 430:GOTO 60
90   highscore=MAX(highscore,score):score
=0
100   CLS #1:CLS #2
110   IF (control MOD 3)=0 THEN message$=
"FIZZ"
120   IF (control MOD 5)=0 THEN message$=
"BUZZ"
130   IF (control MOD 5)=0 AND (control M
OD 3)=0 THEN message$="FIZZ BUZZ"
140   IF (control MOD 5)<>0 AND (control
MOD 3)<>0 THEN Flagx=-1
150   IF flagx THEN PRINT #1,control;" is
 not divisible by 3 or 5":GOTO 170
160   PRINT #1,"The correct answer is ";m
essage$
170   PRINT #2,"Do you want to play again
 (Y/N) ?";:
180   z$=INKEY$:IF z$=""THEN 180
190   IF z$="y" OR z$="Y" THEN 30
200   STOP
210 'Initialisation routine
```

```
220    GOSUB 390
230    WINDOW #1,1,40,9,20
240    PRINT #1,"In this game you enter nu
mbers in their"
250    PRINT #1,"normal sequence (1,2,3,..
.), getting  1"
260    PRINT #1,"point for each one that i
s correct. The"
270    PRINT #1,"only  difference is, if t
he  number can"
280    PRINT #1,"be divided exactly by 3,
enter the word"
290    PRINT #1,"FIZZ instead. Similarly,
 if it can  be"
300    PRINT #1,"divided  exactly  by 5, t
hen you should"
310    PRINT #1,"enter the word  BUZZ  ins
tead. If  both"
320    PRINT #1,"rules apply (eg 15=5x3) t
hen you should"
330    PRINT #1,"enter FIZZ BUZZ."
340    WINDOW #2,1,40,21,24
350    LOCATE #2,9,2:PRINT #2,"PRESS ANY K
EY TO PLAY"
360    IF INKEY$="" THEN 360
370    highscore=0:score=0
380    RETURN
390   'Clear and title screen
400    MODE 1:LOCATE 15,2:PRINT "FIZZ/BUZZ
"
410    LOCATE 15,3:PRINT STRING$(9,208)
420    RETURN
430   'Score Routine
440    WINDOW #3,1,40,5,8
450    LOCATE #3,1,1:PRINT #3,"Score : ";s
core:LOCATE #3,23,1:PRINT #3,"High Score
 : ";highscore
460    RETURN
470   'Enter answer
480    LOCATE #2,1,1:PRINT #2,"    Each ent
ry must be terminated by the":PRINT #2,"
                ENTER key"
490    i=1:answer$=""
500    z$=INKEY$:IF z$=""THEN 500
510    IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
```

```
520   IF z$=CHR$(13) THEN PRINT #1,CHR$(1
3):RETURN
530   IF (z$<"A" OR z$>"Z") AND z$<>"-" A
ND (z$<"0" OR z$>"9") AND z$<>" " THEN 5
00
540   answer$=answer$+z$:PRINT #1,z$;:GOT
O 500
550   'Ckeck Answer
560   flag=0
570   IF answer$="FIZZ" AND control/3=INT
(control/3) AND control/5<>INT(control/5
) THEN flag=-1
580   IF answer$="BUZZ" AND control/5=INT
(control/5) AND control/3<>INT(control/3
) THEN flag=-1
590   IF answer$="FIZZ BUZZ" AND control/
3=INT(control/3) AND control/5=INT(contr
ol/5) THEN flag=-1
600   IF LEFT$(answer$,1)>"9" OR LEFT$(an
swer$,1)<"0" THEN RETURN
610   answer=VAL(answer$)
620   IF answer=control AND control/3<>IN
T(control/3) AND control/5<>INT(control/
5) THEN flag=-1
630   RETURN
```

10

Highway Code

```
QUESTIONS: 10    SCORE: 9


On a road without a footpath,
you should walk:
1. On either side.

2. On the left hand side.

3. On the right-hand side.

    PRESS 1, 2 OR 3, JOHN
```

Sorry, we don't have a green giant to help you across the road or help you solve any of the questions in this game. This program is designed to make sure that you know your code before you begin to take your cycle out on the open road. It will also help you to keep your parents out of trouble as you can tell them where they shouldn't park their cars.

How to play

The first thing your jolly green computer will ask you is your name which you should enter and press ENTER.

You will then be given a series of questions with three answers to each. You must choose the correct one if you want to get points and, in real life, stay alive on the road.

Example: The best place to cross the road is

    1. a) at a bus stop

    2. b) between cars

    3. c) on a zebra crossing

You must press 1, 2 or 3. The quicker your response the higher the score.

The game will end after twenty questions which are at random so you may get the same one twice.

Programming Hints

To change the selection of questions you alter the input data lines from 1010 onwards if you wish to make things easier or more difficult for the player.

Program

```
1      'Highway Code
2      'Copyright (c) 1984 Vince Apps
3      'Amstrad CPC 464 version by R.P.Jone
s
10         EVERY 50,0 GOSUB 1140
20         GOSUB 470
30         DIM question$(13),answer$(13,3),an
s(3)
40         LOCATE #2,5,2:PRINT #2,"What is yo
ur name ";
50         score=0:questions=0
60         lastquest=0
70         INPUT #2,name$
80         IF name$="" THEN 40
90         GOSUB 600
100        CLS #2
110        GOSUB 690
120        flag=0
130        question=INT(RND*13)+1
140        IF question=lastquest THEN 120
150        ans(1)=INT(RND*2)+1
```

```
160    ans(2)=INT(RND*2)+1
170    IF ans(2)=ans(1) THEN 160
180    ans(3)=6-ans(1)-ans(2)
190    GOSUB 540
200    GOSUB 730
210    questions=questions+1
220    GOSUB 360
230    IF guess=0 THEN GOSUB 970:GOTO 250
240    IF ans(guess)=1 THEN GOSUB 780 ELS
E GOSUB 880
250    GOSUB 690
260    IF questions<20 THEN 120
270    CLS#2:LOCATE #2,3,5:PRINT #2,"You
scored";score;" out of 200"
280    level$="":IF score<25 THEN level$=
"not very good"
290    IF score>24 AND score<75 THEN leve
l$="average"
300    IF score>74 AND score<125 THEN lev
el$="pretty good"
310    IF score>124 AND score<160 THEN le
vel$="superb"
320    IF score>159 AND score<200 THEN le
vel$="out of this world"
330    IF score=200 THEN level$="cheating
!!"
340    LOCATE #2,10,7:PRINT #2,"You were
";level$
350    END
360    'Enter answer
370    LOCATE #3,2,2:PRINT #3,name$;", Pr
ess 1,2, or 3  ";
380    t=0
390    timeleft=10-t
400    LOCATE #4,1,1:PRINT #4,timeleft;"
seconds left";" "
410    z$=INKEY$
420    IF z$<>"" THEN 440
430    IF t<10 THEN 390 ELSE guess=0:GOTO
 460
440    IF z$<"1" OR z$>"3" THEN 410
450    guess=VAL(z$)
460    RETURN
470    'Clear & Title Screen
480    MODE 1: INK 0,2:INK 1,24:BORDER 21
```

```
490    WINDOW #1,1,40,1,6:WINDOW #2,1,40,
7,20:WINDOW #3,1,40,21,25
500    WINDOW #4,20,40,18,18
510    LOCATE #1,8,2:PRINT #1,"H I G H W
A Y   C O D E"
520    LOCATE #1,8,3:PRINT #1,STRING$(23,
208)
530    RETURN
540    'Print Question
550    CLS#2
560    LOCATE #2,2,2:PRINT #2,LEFT$(quest
ion$(question),37)
570    IF LEN(question$(question))<38 THE
N RETURN
580    LOCATE #2,2,3:PRINT #2,MID$(questi
on$(question),38,39)
590    RETURN
600    'Read data into arrays
610    FOR i=1 TO 13
620      READ question$(i)
630      question$(i)=question$(i)+" ?"
640        FOR j=1 TO 3
650          READ answer$(i,j)
660        NEXT j
670    NEXT i
680    RETURN
690    'Score Routine
700    LOCATE #1,5,5:PRINT #1,"Score   :
";Score
710    LOCATE #1,20,5:PRINT #1,"Questions
   :  ";Questions
720    RETURN
730    'Choices
740    FOR i=1 TO 3
750      LOCATE #2,5,4+(i*2-1):PRINT #2,i;
".   ";answer$(question,ans(i))
760    NEXT i
770    RETURN
780    'Correct
790    CLS#3:CLS#4
800    LOCATE #3,12,2:PRINT #3,"C O R R E
 C T !"
810        FOR i=1 TO 750
820        NEXT i
830    score=score+timeleft
840    GOSUB 690
```

```
850      FOR i=1 TO 750
860      NEXT i
870    RETURN
880  'Wrong
890    CLS#3:CLS#4
900    LOCATE #3,14,2:PRINT #3,"W R O N G
! "
910      FOR i=1 TO 750
920      NEXT i
930    GOSUB 690
940      FOR i=1 TO 750
950      NEXT i
960    RETURN
970  'Out of time
980    CLS #3:CLS #4:LOCATE #3,8,2:PRINT #
3,"O U T     O F     T I M E !"
990    FOR i=1 TO 1000:NEXT i
1000   RETURN
1010   DATA What should you wear at night
,Something light or reflective,dark clot
hes,as many clothes as possible
1020   DATA Which is the safest place to
cross the road,A zebra crossing,A dual c
arraigeway,Between parked cars
1030   DATA Where should you stand before
 crossing the road,On the pavement,Near
the kerb,Behind a parked car
1040   DATA Where might you see zig-zag l
ines,Near a zebra crossing,Near traffic
lights,On a busy road
1050   DATA On a road without a footpath
where should you walk,On the right-hand
side,On the left-hand side,On either sid
e
1060   DATA What is the best way to cross
 a clear road,Walk straight across,Run,W
alk diagonally
1070   DATA When will a car take longest
to stop,On a wet road,On a dry road,On a
 busy road
1080   DATA At a pelican crossing you see
 a Red Man. What do you do,Wait,Run quic
kly across,Walk across
1090   DATA Where should you get on a bus
,At a bus stop,At traffic lights,Anywher
e it has stopped
```

```
1100   DATA What must you have on a cycle
 at night,Front and rear lamps and a ref
lector,Front and rear lamps,Front lamp a
nd a reflect
or
1110   DATA When you are with a dog shoul
d it be,On a lead,In the road,Running fr
ee
1120   DATA Red and amber lights at traff
ic lights mean,Traffic about to start,Tr
affic stopping,Traffic moving both ways
1130   DATA On a cycle at traffic lights
showing red what should you do,Wait unti
l they are green,Cycle through,Get off a
nd walk acro
ss
1140   t=t+1:RETURN
```
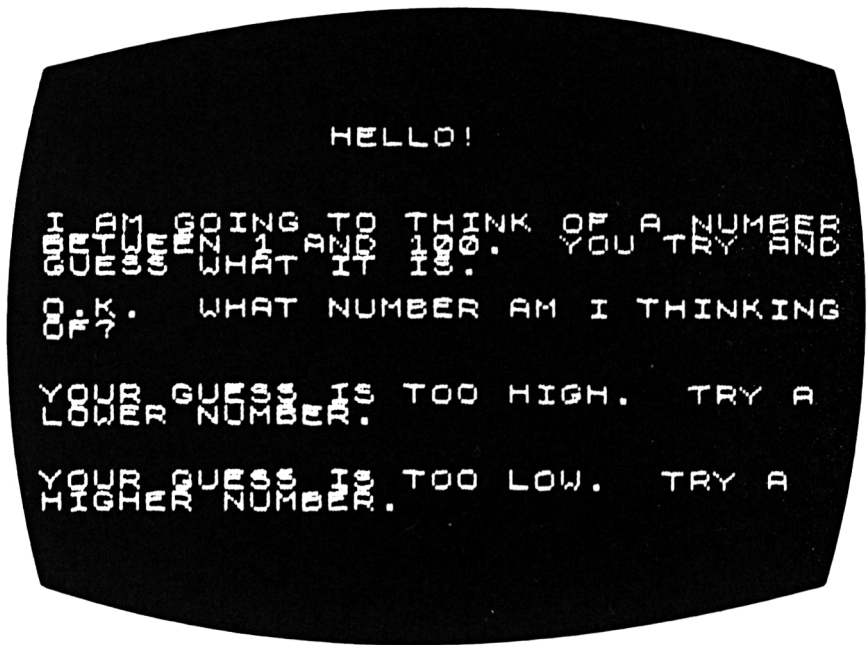
11

Guess the Number


```
                    HELLO!

I AM GOING TO THINK OF A NUMBER
BETWEEN 1 AND 100.  YOU TRY AND
GUESS WHAT IT IS.

O.K.   WHAT NUMBER AM I THINKING
OF?

YOUR GUESS IS TOO HIGH.   TRY A
LOWER NUMBER.

YOUR GUESS IS TOO LOW.   TRY A
HIGHER NUMBER.
```

You have the chance here to see if you can guess the number your computer has chosen for you.

The game will begin with a number between 1 and 100 but as you become an expert at guessing the number your computer will start to widen the range to between 1 and 120, and then 140 and so on.

How to play

Your friendly computer will ask you to guess the number it has thought of and you enter your first guess. Your computer will tell you if you are cold, quite warm, warm or white hot with your guess.

If your answer is quick and correct then the game becomes harder with a wider range of numbers but if you are slow then your computer will wind down to help you.

Programming Hints

You can make the game easier or more difficult to start with if you decrease or increase the value of 'mx' in line 30.

Program

```
10 REM Guess the Number
20 MODE 1:BORDER 13
30 MX=100
40 REM LOOP
50 CLS
60 COUNTER=0:TRIES=0
70 GOSUB 370
80 LOCATE 1,8:PRINT"I am going to think
of a number between 1 and ";MX;"."
90 LOCATE 1,11:PRINT"You try to guess wh
at it is."
100 FOR J=1 TO 1000:NEXT J
110 LOCATE 1,14:PRINT"Thinking";
120 FOR i=1 TO 200
130 IF I/10=INT(I/10) THEN PRINT".";
140 RAND=INT(RND(1)*MX+1)
150 NEXT I
160 REM LOOP
170 LOCATE 1,17:PRINT SPACE$(40);
180 LOCATE 1,17:PRINT"Alright, now guess
 ";
190 INPUT ANSWER
200 LOCATE 1,21:PRINT SPACE$(120);
210 TRIES=TRIES+1
220 IF ANSWER>RAND THEN GOSUB 470
230 IF ANSWER<RAND THEN GOSUB 500
240 IF ANSWER<>RAND THEN DIST=ABS(ANSWER
-RAND):GOSUB 530
250 IF ANSWER<>RAND THEN GOTO 160
260 LOCATE 1,21:PRINT"Well done. You gue
ssed it in ";TRIES;" tries."
270 GOSUB 610
280 TEMP=MX
290 REM LOOP
300 COUNTER=COUNTER+1
310 TEMP=TEMP/2
320 IF TEMP>1 THEN GOTO 290
```
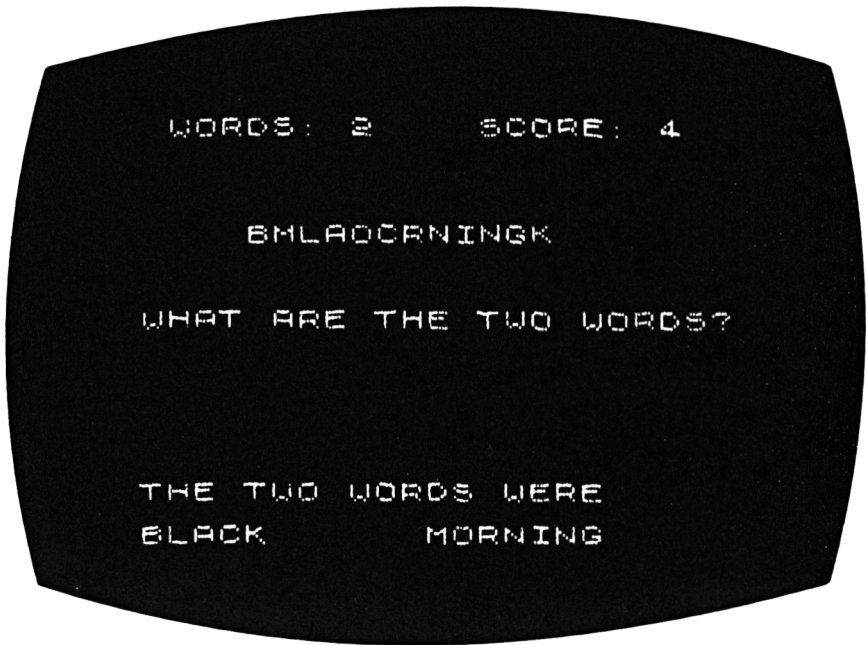
```
330 IF TRIES<COUNTER+2 THEN GOSUB 680 EL
SE GOSUB 720
340 FOR J=1 TO 6000:NEXT J
350 GOTO 40
360 END
370 REM
380 LOCATE 1,2:PRINT"Guess the Number"
390 LOCATE 1,3:PRINT"================"
400 HEL$="HELLO"
410 FOR I=1 TO 5
420 LOCATE I*3+7,5:PRINT MID$(HEL$,I,1);
430 LOCATE I*3+7,6:PRINT "="
440 FOR J=1 TO 600:NEXT J
450 NEXT I
460 RETURN
470 REM
480 LOCATE 1,21:PRINT"Too high, try a lo
wer number"
490 RETURN
500 REM
510 LOCATE 1,21:PRINT"Too low, try a hig
her number"
520 RETURN
530 REM
540 LOCATE 1,23:PRINT"You were ";
550 IF DIST<3 THEN PRINT"** WHITE HOT **
":TEMP=200:GOSUB 770:RETURN
560 IF DIST<8 THEN PRINT"HOT":TEMP=150:G
OSUB 770:RETURN
570 IF DIST<15 THEN PRINT"WARM":TEMP=100
:GOSUB 770:RETURN
580 IF DIST<30 THEN PRINT"COLD":TEMP=60:
GOSUB 770:RETURN
590 PRINT"FREEZING":TEMP=10:GOSUB 770
600 RETURN
610 REM
620 FOR I=100 TO 204 STEP 8
630 SOUND 1,I,4
640 SOUND 2,I+3,4
650 SOUND 3,I+5,4
660 NEXT I
670 RETURN
680 REM
690 MX=MX+20
700 LOCATE 1,23:PRINT"That is very good
so I will increase      the maximum to ";
MX
```

```
710 RETURN
720 REM
730 IF MX<21 THEN RETURN
740 MX=MX-20
750 LOCATE 1,23:PRINT"That took too long
, so I will reduce the maximum to ";MAX
760 RETURN
770 REM
780 SOUND 1,TEMP,100
790 RETURN
```

12

Word Mix


```
WORDS:  2        SCORE:  4


      BMLAOCRNINGK

WHAT ARE THE TWO WORDS?




THE TWO WORDS WERE
BLACK           MORNING
```

If you ever get words mixed together when you are thinking about something else and have to go back and rewrite your essay then this game will be easy for you.

We have mixed one word through another but we haven't jumbled them up - if you see what we mean.

Here is an example: ABFOOUUTR

                      spells ABOUT FOUR

As you can see both words are mixed together but not jumbled. You have to have a sharp eye to pick them out and separate them.

How to play

The computer will put up on your screen two words mixed as in the example above.

Type in the first word and press ENTER then the second word and ENTER.

You can use lower case - capitals aren't necessary.

You will receive one point for each correct word and the score will appear on the top of your screen.

If you cannot solve the riddle type ESCAPE to give up.

Programming Hints

If you wish to make the selection of words even more difficult then change the data in lines 940 onward. If you increase the number of words make sure that you change the 50 in lines 130, 140, 270 290 to match the total number of words, e.g. if you had 80 words, line 130 would be:

130 DIM Word$ (80)

Program

```
10 REM Word Mix
20 MODE 1:BORDER 13
30 GOSUB 120
40 REM LOOP
50 CLS
60 GOSUB 200
70 GOSUB 260
80 GOSUB 320
90 GOSUB 640
100 GOSUB 810
110 GOTO 40
120 REM
130 DIM WORD$(50)
140 FOR I=1 TO 50
150 READ WORD$(I)
160 NEXT I
```

```
170 SCORE=0
180 TRIES=0
190 RETURN
200 REM
210 LOCATE 1,2:PRINT"Words: ";TRIES
230 LOCATE 1,20:PRINT"Score: ";SCORE
250 RETURN
260 REM
270 RAND1=INT(RND(1)*50+1)
280 REM LOOP
290 RAND2=INT(RND(1)*50+1)
300 IF RAND1=RAND2 THEN GOTO 280
310 RETURN
320 REM
330 MIX1=1:MIX2=1
340 SCREENX=3:SCREENY=6
370 REM LOOP
380 IF RND>0.5 THEN GOSUB 410 ELSE GOSUB
    480
390 IF MIX1<10 OR MIX2<10 THEN GOTO 370
400 RETURN
410 REM
420 IF MIX1>10 THEN RETURN
430 TEMP$=MID$(WORD$(RAND1),MIX1,1)
440 MIX1=MIX1+1
450 IF TEMP$="" THEN RETURN
460 TEMP1$=TEMP$:GOSUB 550
470 RETURN
480 REM
490 IF MIX2>10 THEN RETURN
500 TEMP$=MID$(WORD$(RAND2),MIX2,1)
510 MIX2=MIX2+1
520 IF TEMP$="" THEN RETURN
530 TEMP1$=TEMP$:GOSUB 550
540 RETURN
550 REM
560 LOCATE SCREENX,SCREENY:PRINT TEMP1$;
570 SCREENX=SCREENX+2
590 SOUND 1,SCREENX*6+40,35
600 IF SQ(1)<>4 THEN GOTO 600
630 RETURN
640 REM
650 LOCATE 1,12:PRINT"Guess what the two
    words are or press"
660 LOCATE 1,13:PRINT"<CLR> to finish."
670 LOCATE 1,16:PRINT"Word 1: ";
```

```
680 GOSUB 720:GUESS1$=TEMP1$
690 LOCATE 1,18:PRINT"Word 2:  ";
700 GOSUB 720:GUESS2$=TEMP1$
710 RETURN
720 REM
730 TEMP$="":TEMP1$=""
740 REM LOOP
750 TEMP$=INKEY$
760 TEMP$=UPPER$(TEMP$)
765 IF TEMP$=CHR$(16) THEN CLS:PRINT"GOO
DBYE.":PRINT:END
770 IF TEMP$>="A" AND TEMP$<="Z" AND LEN
(TEMP1$)<10 THEN TEMP1$=TEMP1$+TEMP$:PRI
NT TEMP$;
780 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
790 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 740
800 RETURN
810 REM
820 LOCATE 1,12:PRINT SPACE$(255);SPACE$
(5);
830 FLAG=0
840 IF GUESS1$=WORD$(RAND1) OR GUESS1$=W
ORD$(RAND2) THEN FLAG=1
850 IF GUESS2$=WORD$(RAND2) OR GUESS2$=W
ORD$(RAND1) THEN FLAG=FLAG+1
855 IF GUESS1$=GUESS2$ AND FLAG<>0 THEN
FLAG=1
860 TRIES=TRIES+1:SCORE=SCORE+FLAG
870 IF FLAG=0 THEN LOCATE 1,12:PRINT"Bot
h wrong !!":SOUND 1,180,400:GOTO 900
880 IF flag=1 THEN LOCATE 1,12:PRINT"Onl
y one right !!":SOUND 1,360,250:GOTO 900
890 LOCATE 1,12:PRINT"Both right !!!":FO
R i=1 TO 10:SOUND 1,150,35:SOUND 1,150-i
*10,20:NEXT i
900 LOCATE 1,15:PRINT word$(rand1):LOCAT
E 20,15:PRINT word$(rand2)
910 GOSUB 200
920 LOCATE 5,18:PRINT"Press a key for a
new word";
923 IF INKEY$<>"" THEN GOTO 923
926 IF INKEY$="" THEN GOTO 926
930 RETURN
```

```
940 DATA BANK,HOUR,MOST
950 DATA YARD,FOUR,SETTLE
960 DATA MORNING,TIME,FOUND
970 DATA HOOF,SAD,BLACK
980 DATA ANIMAL,ABOUT,SOLDIER
990 DATA COLONEL,RUMOUR,ENGINE
1000 DATA LEG,CASTLE,DIGEST
1010 DATA GUITAR,DOG,BUTTER
1020 DATA BRICK,SPACE,DUCK
1030 DATA AEROPLANE,BATTERY
1040 DATA SPARROW,PRINT,STAR
1050 DATA SYSTEM,CANARY,BASE
1060 DATA WHITE,TABLE,CHAIR
1070 DATA MAGIC,LAND,JUSTIFY
1080 DATA HABIT,MECHANIC
1090 DATA CYLINDER,OIL,SPADE
1100 DATA MARKET,TRACTOR,ROBUST
1110 DATA VARIETY
```

13

Constellations
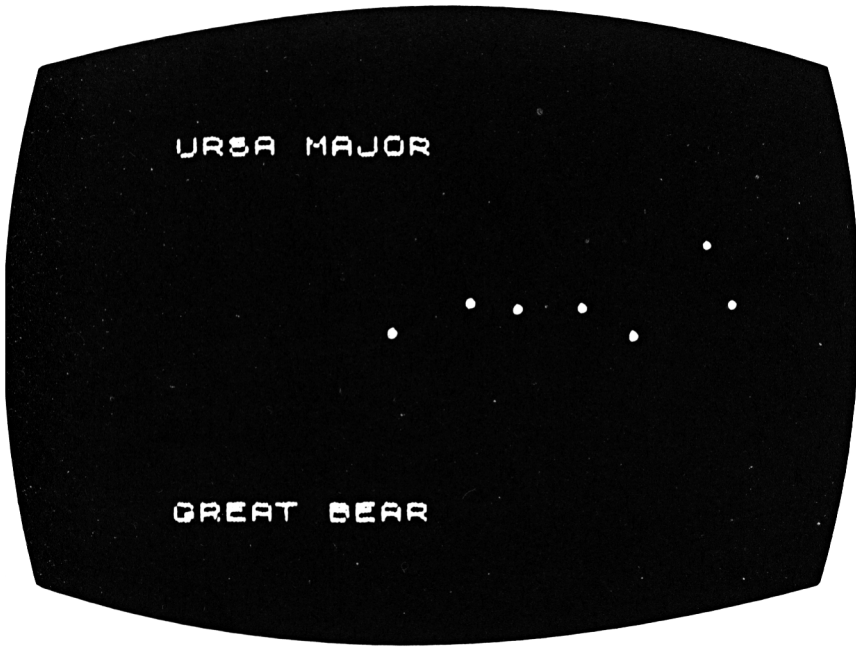
This is a great game for learning how to make money off your pals by asking them at night if they know which star group is which in the sky.

It is also very handy to know your stars as you never know when you will need to navigate your way out of a crocodile-infested swamp - or drive to London in the dark. The star at the end of the tail of Ursa Minor, or the little bear, is called the pole star and will always be to your North.

How to play

The computer will show you the shape of some of the main star groups to be found in the skies around us and will give you the Latin and the common names for each group.

The screen will then show the stars without any names and will ask you to type in your answer in CAPS and ENTER.

If your guess is wrong the screen will light up and show you both the names. To stop the game press ESCAPE.

Happy stargazing.

Program

```
10 REM Constellations
20 MODE O:BORDER 17
30 LOCATE 1,2:PRINT"CONSTELLATIONS"
40 LOCATE 1,3:PRINT"=============="
50 FOR L=1 TO 800:NEXT L
60 MODE 1:BORDER 13
70 GOSUB 380
80 FOR LOOP=1 TO 7
90 IF FLAG=0 THEN GOTO 120
100 RAND=INT(RND(1)*7+1)
110 RESTORE
111 RELOOP=RAND-1
112 IF RELOOP=0 THEN GOTO 120
113 READ D:IF D<>9999 THEN GOTO 113
114 READ D,TEMP1$,TEMP1$
115 RELOOP=RELOOP-1
116 GOTO 112
120 READ STARX,STARY
130 IF STARX=9999 THEN GOTO 190
140 IF STARX>1000 OR STARX<-1000 THEN ST
ARX=STARX-(1000*SGN(STARX)):GOTO 170
150 PLOT SCREENX+STARX/2,SCREENY+STARY/3
160 GOTO 120
170 PLOT SCREENX+STARX/2,SCREENY+STARY/3
:PLOT SCREENX+STARX/2+2,SCREENY+STARY/3
180 GOTO 120
190 READ NAME1$,NAME2$
200 IF FLAG=0 THEN GOTO 250
210 LOCATE 1,6:PRINT"Which is this: ";
220 GOSUB 420
230 LOCATE 1,6:PRINT SPACE$(39):LOCATE 1
,6
240 IF TEMP1$=NAME1$ OR TEMP1$=NAME2$ TH
EN GOSUB 510 ELSE GOSUB 590
```

```
250 LOCATE 1,2:PRINT NAME1$
260 LOCATE 1,4:PRINT NAME2$
270 FOR I=1 TO 500:NEXT I
280 CLS:NEXT LOOP
290 FLAG=1:GOTO 80
300 DATA 0,0,120,64,195,48,315,53,375,0,
1525,64,1485,176,9999,0,"URSA MAJOR","GR
EAT BEAR"
310 DATA 0,0,1060,-5,15,101,65,96,120,17
6,200,224,1285,256,9999,0,"URSA MINOR","
LITTLE BEAR"
320 DATA 0,0,30,-96,90,-96,1120,197,1220
,-149,9999,0,"CASSIOPEIA",""
330 DATA 0,-5,25,21,-25,-27,-30,-187,60,
160,1130,-160,-1100,176,9999,0,"ORION","
THE HUNTER"
340 DATA 0,0,35,-11,70,-5,1100,11,125,53
,100,101,9999,0,"CORONA BOREALIS","NORTH
ERN CROWN"
350 DATA 0,0,105,-48,195,-64,190,-101,99
99,0,"SAGITTA","THE ARROW"
360 DATA 0,0,125,64,1170,293,1235,187,45
0,-48,360,43,330,80,370,277,9999,0,"CYGN
US","THE SWAN"
370 END
380 REM
390 SCREENX=250:SCREENY=125
400 FLAG=0
410 RETURN
420 REM
430 TEMP$="":TEMP1$=""
440 REM LOOP
450 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 4
50
460 TEMP$=UPPER$(TEMP$)
470 IF TEMP$>=" " AND TEMP$<="Z" AND LEN
(TEMP1$)<20 THEN TEMP1$=TEMP1$+TEMP$:PRI
NT TEMP$;
480 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
490 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 440
500 RETURN
510 REM
520 PRINT"CORRECT"
```

```
530 FOR I=100 TO 200 STEP 10
540 SOUND 1,I,10
550 SOUND 2,I+1,8
560 SOUND 3,I+2,6
570 NEXT I
575 IF SQ(1)<>4 THEN GOTO 575
580 RETURN
590 REM
600 PRINT"WRONG"
610 FOR I=150 TO 50 STEP -50
620 SOUND 1,I,10
630 SOUND 2,I+1,8
640 SOUND 3,I+2,6
650 NEXT I
655 IF SQ(1)<>4 THEN GOTO 655
660 RETURN
```

14

History Quiz

```
QUESTIONS: 2    SCORE: 19


WHERE DID THE GREAT FIRE OF
LONDON START?
1. FURNACE LANE
2. PUDDING LANE
3. OXFORD CIRCUS

PRESS 1, 2 OR 3, DAVID
```

Here is a chance to catch up on your history lessons without looking stupid because you have got the answer wrong. If you are working with your own computer no one will know that you need more practice with your history.

This is very like the science quiz which offers multiple answers for which you must make the correct choice. You can also alter the questions in this program as explained at the end.

How to play

The computer will ask you for your name and you type it in and press ENTER.

A choice of statements will appear on the screen and you will be asked to choose the correct answer.

Example:

The Napoleonic wars were fought between?

1. The French and English

2. The English and Americans

3. The French and Italians

To answer press 1, 2 or 3

If you are correct the computer will tell you and if you are wrong the computer will print 'That is wrong'.

Programming Hints

The lines to change for your own questions are from 1010 on. Remember, if you change the total number of questions you will have to change lines 30, 130, 260, 270, 350. You will also have to change the achievement levels in lines 280 to 340 otherwise you will get some funny statements on your screen.

Program

```
1       'History Quiz
2       'Copyright (c) 1984 Vince Apps
3       'Amstrad CFC 464 version by R.F.Jone
s
10      EVERY 50,0 GOSUB 1210
20      GOSUB 470
30      DIM question$(20),answer$(20,3),an
s(3)
40      LOCATE #2,5,2:PRINT #2,"What is yo
ur name ";
50      score=0:questions=0
60      lastquest=0
70      INPUT #2,name$
80      IF name$="" THEN 40
90      GOSUB 600
100     CLS #2
110     GOSUB 690
```

```
120     flag=0
130     question=INT(RND*20)+1
140     IF question=lastquest THEN 120
150     ans(1)=INT(RND*2)+1
160     ans(2)=INT(RND*2)+1
170     IF ans(2)=ans(1) THEN 160
180     ans(3)=6-ans(1)-ans(2)
190     GOSUB 540
200     GOSUB 730
210     questions=questions+1
220     GOSUB 360
230     IF guess=0 THEN GOSUB 970:GOTO 250
240     IF ans(guess)=1 THEN GOSUB 780 ELS
E GOSUB 880
250     GOSUB 690
260     IF questions<20 THEN 120
270     CLS#2:LOCATE #2,3,5:PRINT #2,"You
scored";score;" out of 200"
280     level$="":IF score<25 THEN level$=
"not very good"
290     IF score>24 AND score<75 THEN leve
l$="average"
300     IF score>74 AND score<125 THEN lev
el$="pretty good"
310     IF score>124 AND score<160 THEN le
vel$="superb"
320     IF score>159 AND score<200 THEN le
vel$="out of this world"
330     IF score=200 THEN level$="cheating
!!"
340     LOCATE #2,10,7:PRINT #2,"You were
";level$
350     END
360     'Enter answer
370     LOCATE #3,2,2:PRINT #3,name$;", Pr
ess 1,2, or 3   ";
380     t=0
390     timeleft=10-t
400     LOCATE #4,1,1:PRINT #4,timeleft;"
seconds left";" "
410     z$=INKEY$
420     IF z$<>"" THEN 440
430     IF t<10 THEN 390 ELSE guess=0:GOTO
 460
440     IF z$<"1" OR z$>"3" THEN 410
450     guess=VAL(z$)
```

```
460    RETURN
470    'Clear & Title Screen
480    MODE 1: INK 0,2:INK 1,24:BORDER 21
490    WINDOW #1,1,40,1,6:WINDOW #2,1,40,
7,20:WINDOW #3,1,40,21,25
500    WINDOW #4,20,40,18,18
510    LOCATE #1,8,2:PRINT #1,"H I S T O
R Y   Q U I Z"
520    LOCATE #1,8,3:PRINT #1,STRING$(23,
208)
530    RETURN
540    'Print Question
550    CLS#2
560    LOCATE #2,2,2:PRINT #2,LEFT$(quest
ion$(question),37)
570    IF LEN(question$(question))<38 THE
N RETURN
580    LOCATE #2,2,3:PRINT #2,MID$(questi
on$(question),38,39)
590    RETURN
600    'Read data into arrays
610    FOR i=1 TO 20
620     READ question$(i)
630     question$(i)=question$(i)+" ?"
640      FOR j=1 TO 3
650       READ answer$(i,j)
660      NEXT j
670    NEXT i
680    RETURN
690    'Score Routine
700    LOCATE #1,5,5:PRINT #1,"Score   :
";Score
710    LOCATE #1,20,5:PRINT #1,"Questions
   :   ";Questions
720    RETURN
730    'Choices
740    FOR i=1 TO 3
750     LOCATE #2,5,4+(i*2-1):PRINT #2,i;
".   ";answer$(question,ans(i))
760    NEXT i
770    RETURN
780    'Correct
790    CLS#3:CLS#4
800    LOCATE #3,12,2:PRINT #3,"C O R R E
 C T !"
810     FOR i=1 TO 750
```

```
820      NEXT i
830    score=score+timeleft
840    GOSUB 690
850      FOR i=1 TO 750
860      NEXT i
870    RETURN
880  'Wrong
890    CLS#3:CLS#4
900    LOCATE #3,14,2:PRINT #3,"W R O N G
! "
910      FOR i=1 TO 750
920      NEXT i
930    GOSUB 690
940      FOR i=1 TO 750
950      NEXT i
960    RETURN
970  'Out of time
980    CLS #3:CLS #4:LOCATE #3,8,2:PRINT #
3,"O U T    O F    T I M E !"
990    FOR i=1 TO 1000:NEXT i
1000    RETURN
1010    DATA When did Julius Caeser first
come to Britain,55 BC,1914,1066
1020    DATA Who reigned before Queen Eliz
abeth II,George V1,Queen Victoria,Edward
 VII
1030    DATA Who introduced the Penny Post
,Rowland Hill,Julius Caeser,Walter Ralei
gh
1040    DATA Where did the Great Fire of L
ondon Start,Pudding Lane,Oxford Circus,F
urnace Lane
1050    DATA When was the Battle of Hastin
gs,1066,1943,1841
1060    DATA Why were the Egyptian Pyramid
s built,As tombs,As houses,For grain sto
rage
1070    DATA Who was sent to Australia in
the late 18th century,Convicts,Prisoners
 of War,Slaves
1080    DATA Which century are we in now,2
0th,19th,18th
1090    DATA Who was Disraeli,A Prime Mini
ster,A King,An author
1100    DATA Who invented the telephone,Be
ll,Cook,Baird
```

```
1110   DATA Who was the first man in spac
e,Yuri Gagarin,Neil Armstrong,Leonardo D
i Vinci
1120   DATA When did the First World War
start,1914,1939,1918
1130   DATA Who was Sir Robert Walpole,Th
e first Prime Minister,Inventor of the l
ocomotive,Discoverer of America
1140   DATA With which animals did Hannib
al cross the Alps,Elephants,Camels,Llama
s
1150   DATA Who started the Police Force,
Peel,Nelson,Gladstone
1160   DATA Who defeated the Spanish Arma
da,Francis Drake,Walter Raleigh,Henry VI
II
1170   DATA What was Chain Mail,Armour,An
 early postal service,A ship's anchor ch
ain
1180   DATA How many wives did Henry VIII
 have,six,eight,two
1190   DATA What animal spread the plague
 of 1665,Rat,Mouse,Horse
1200   DATA Who was the first person to s
tep on the Moon,Armstrong,Gagarin,Shephe
rd
1210   t=t+1:RETURN
```
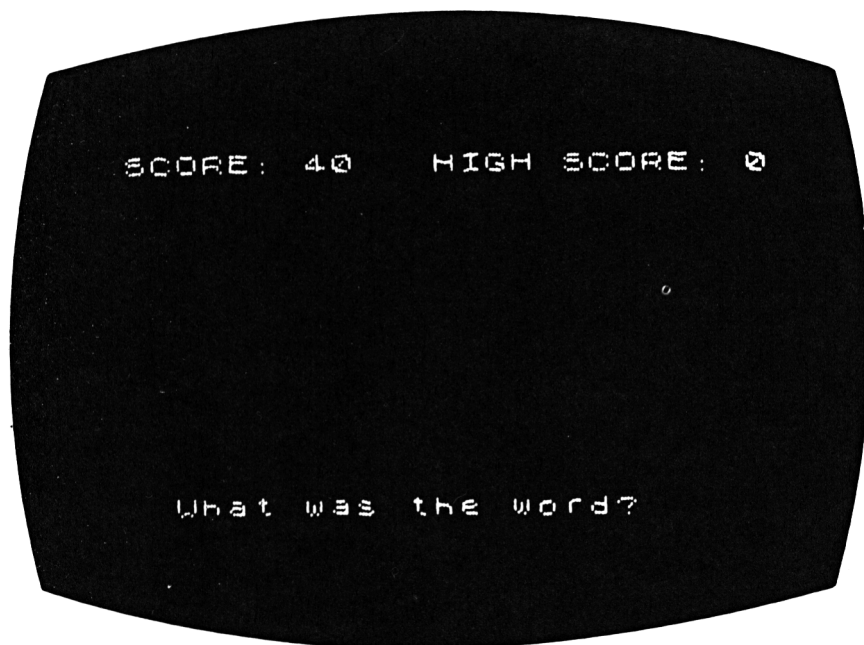
15

Spelling Test

Well, you must have expected to find a spelling test somewhere in the book and here it is.

How to play

Your computer will put a word on the screen for a few seconds and then blank the screen and ask you to spell the same word correctly.

You may use lower or upper case (capitals) for your answer.

Programming Hints

If you think the time that you see the word on the screen is too long or too short you can alter the pause in line 130. If you feel that the

words are too easy for a bright young thing like you then ask your parents to type in some more difficult words from line 10 onward. If you add more words, change the 50 in lines 80, 90 and 300 to match the total number of words.

The computer will ask its questions at random so you shouldn't really know what is coming up next.

Program

```
1 'Spelling Test
2 'Copyright (c) VINCE APPS 1984
3 'AMSTRAD CPC 464 version by R.P.Jones
10   DATA QUIZ,MESSAGE,PAVEMENT,BICYCLE,S
PECIAL,BENEATH,MOUNTAIN,LISTEN
20   DATA SCHOOL,TOMORROW,BUSINESS,ADDRES
S,PARALLEL,HEIGHT,LENGTH,CEILING
30   DATA EXPERT,KETTLE,COLONEL,SURPRISE,
FORECAST,ATTACH,RHUBARB,MERINGUE
40   DATA DAFFODIL,KNOWLEDGE,YACHT,TONGUE
,MINIATURE,DINGHY,AMATEUR
50   DATA PUNCTUAL,ILLOGICAL,GIRAFFE,PARS
LEY,TRIANGLE,LEGIBLE,MOSAIC
60   DATA DISCIPLE,AMEND,GUITAR,BELIEVE,S
TATION,PRESENCE,SAVOURY,ALCOHOL
70   DATA CABARET,SYLLABLE,AQUATIC,PNEUMA
TIC
80   DIM word$(50)
90     FOR i=1 TO 50
100       READ word$(i)
110     NEXT i
120   score=0:goes=0
130   delay=90-score*4
140 'Main Routine
150   GOSUB 210
160   GOSUB 260
170   GOSUB 290
180   GOSUB 440
190   GOSUB 520
200   IF flag THEN 560 ELSE GOTO 620
210 'Clear and title screen
220   MODE 1:LOCATE 13,2:PRINT "SPELLING
TEST"
230   LOCATE 13,3:PRINT STRING$(13,208)
240   WINDOW #1,1,40,8,16:WINDOW #2,1,40,
17,24
```

```
250    RETURN
260  'Score Routine
270    LOCATE 1,5:PRINT "Score : ";score:L
OCATE 25,5:PRINT "Attemps : ";goes
280    RETURN
290  'Generate and Display Word
300    rand=INT(RND*50)+1
310    temp$=word$(rand)
320    temp2$=LEFT$(temp$,1)
330      FOR i=2 TO LEN(temp$)
340        temp2$=temp2$+CHR$(ASC(MID$(temp
$,i,1))+32)
350      NEXT i
360    LOCATE #1,(40-LEN(temp$))/2,3:PRINT
 #1,temp2$
370    z=TIME
380    WHILE TIME-z<delay
390    REM
400    WEND
410    LOCATE #1,(40-LEN(temp$))/2,3:PRINT
 #1,"                    "
420    LOCATE #2,1,1:PRINT #2,"What was th
at word ";
430    RETURN
440  'Enter answer
450    LOCATE #2,22,1
460    i=1:answer$=""
470    z$=INKEY$:IF z$=""THEN 470
480    IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
490    IF z$=CHR$(13) THEN PRINT #2,CHR$(1
3):RETURN
500    IF (z$<"A" OR z$>"Z") AND z$<>"-" A
ND (z$<"0" OR z$>"9") AND z$<>" " THEN 4
70
510    answer$=answer$+z$:PRINT #2,z$;:GOT
O 470
520  'Ckeck Answer
530    flag=0
540    IF answer$=temp$ THEN flag=-1
550    RETURN
560  'Correct
570    score=score+1:goes=goes+1
580    GOSUB 260
590    CLS #1:CLS #2
600    IF goes=20 THEN LOCATE #1,10,5:PRIN
T #1,"E N D   O F   G A M E":STOP
```
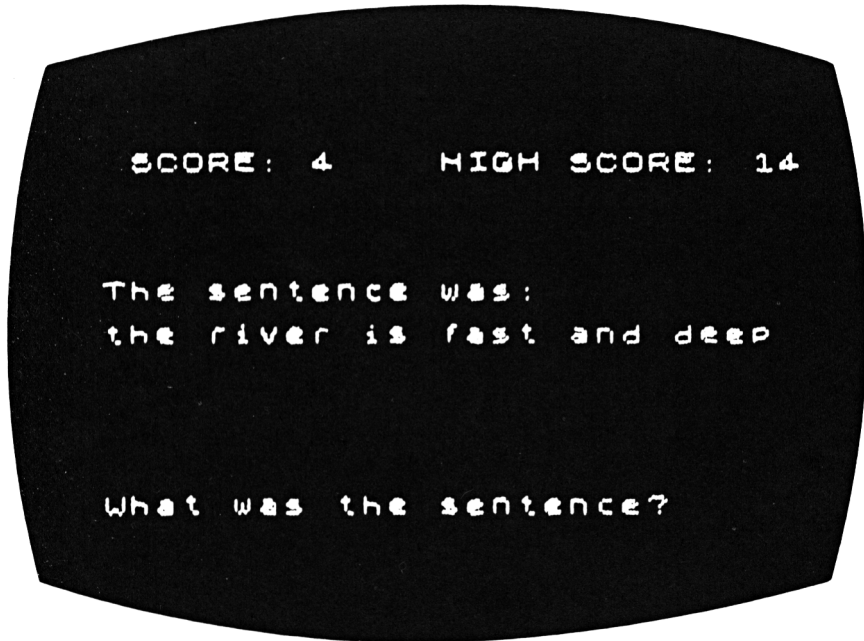
```
610    GOTO 130
620    'Wrong
630    goes=goes+1
640    GOSUB 260
650    CLS #1:CLS #2
660    LOCATE #1,5,5:PRINT #1,"The correct
  spelling is ";TEMP$
670      FOR i=1 TO 2000
680      NEXT i
690    delay=90
700    IF goes=20 THEN CLS #1:LOCATE #1,10
,5:PRINT #1,"E N D   O F   G A M E":STOP
710    GOTO 130
```

16

Speed Reading

```
SCORE: 4      HIGH SCORE: 14


The sentence was:
the river is fast and deep




What was the sentence?
```

This is a game for those show-offs amongst you who can remember everything, write it down and get it right every time.

A sentence will appear on the screen for a few seconds and you must remember the sentence and the correct spelling of the words if you are going to get your points.

There is one big snag for clever little people though - the better your answers the faster the computer goes and you will only get to see the sentence for a split second before you have to answer.

How to play

Your computer will put the line up on the screen and ask you to type it in after a short pause.

You do not need to use caps, but remember to press ENTER.

If you get it wrong the screen will tell you.

Programming Hints

If you want to change the sentences to make it more difficult for yourself, or your friends, the lines to change are from 10 onward.

Program

```
1 'Speed Reading
2 '(c) 1984 BY VINCE APPS
3 'AMSTRAD CPC 464 VERSION BY R.P.JONES
10  DATA FOUR GREEN TURTLES,LONG GREEN P
ENCIL,THE WHEEL IS ROUND
20  DATA THE BOOK IS NOT HEAVY,THE LEAF
IS GREEN,LOOK AT THE TREE
30  DATA PICK UP THE RABBIT,EXTEND THE L
ADDER,THE KITTEN IS UP A TREE
40  DATA WE WAITED A LONG TIME,WE DASHED
 THROUGH THE GATE
50  DATA THE UMBRELLA IS OPEN,THE UMBREL
LA IS CLOSED,THE BOOK IS TOO HEAVY
60  DATA THE SHOP IS CLOSED,OPEN THE CUP
BOARD,RAPID READING RESEARCH
70  DATA ELEPHANTS ARE LARGE MAMMALS,THE
 GRASS IS VERY GREEN
80  DATA THE RIVER IS FAST AND DEEP,GREY
 COMPUTER PERIPHERAL
90  DATA COMPLETELY CORRECTED,RESEARCH A
ND DEVELOPMENT,UNTANGLE THE KNOT
100  DATA FIERY RED FIRE ENGINE,CROSS EX
AMINE THE WITNESS,HOLD UP THE MIRROR
110  DATA LONG RUN OF LUCK,THE SPANIARD
OWNS A DOG,SMALL PIECES OF BUTTER
120  DIM word$(30)
130    FOR i=1 TO 30
140      READ word$(i)
150    NEXT i
160  hi=0
170  score=0:z9=1000:ques=0
180  GOSUB 600:GOSUB 660
190  WHILE ques<5
```

```
200   GOSUB 400
210   GOSUB 470
220   GOSUB 530
230   IF w<>0 OR LEN(answer$)<>LEN(temp$)
 THEN GOSUB 760 ELSE GOSUB 710
240   CLS#1
250   GOSUB 660
260   WEND
270   hi=MAX(hi,score):score=0:CLS #1:GOS
UB 660
280   LOCATE #1,9,4:PRINT #1,"Another gam
e (Y/N) ?";
290   z$=INKEY$:IF z$="" THEN 290
300   IF z$<>"y" AND z$<>"Y" THEN STOP
310   GOTO 170
320   'Keyin Routine
330   answer$=""
340   z$=INKEY$:IF z$=""THEN 340
350   IF z$=CHR$(13) THEN RETURN
360   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
370   IF z$=" "THEN 390
380   IF z$<"A" OR z$>"Z" THEN 340
390   PRINT #1,z$;:answer$=answer$+z$:GOT
O 340
400   'Select and Display Sentence
410   z=INT(RND*30)+1:temp$=word$(z):11=L
EN(temp$)
420   LOCATE #1,(40-11)/2,3:PRINT #1,temp
$
430     FOR i=1 TO z9
440     NEXT i
450   LOCATE #1,(40-11)/2,3:PRINT #1,SPC(
11)
460   RETURN
470   LOCATE #1,8,12:PRINT #1,"What was t
he sentence ?"
480   LOCATE #1,(40-11)/2,7
490   GOSUB 320
500   LOCATE #1,(40-11)/2,3:PRINT #1,temp
$
510   RETURN
520   GOTO 520
530   'Check answer
540   r=0:w=0
550   LOCATE #1,(40-11)/2,5
```

```
560      FOR i=1 TO MIN(LEN(answer$),LEN(t
emp$))
570       IF MID$(answer$,i,1)=MID$(temp$,
i,1) THEN PRINT #1,CHR$(241);:r=r+1 ELSE
 PRINT #1,"x";:w=w+1
580      NEXT i
590     RETURN
600    'Clear and Title Screen
610     MODE 1:INK 0,1:INK 1,6:BORDER 24
620     LOCATE 13,2:PRINT "Speed Reading"
630     LOCATE 13,3:PRINT STRING$(13,208)
640     WINDOW #1,1,40,8,24
650     RETURN
660    'Scoring Routine
670     LOCATE 5,5:PRINT "Score : ";score
680     LOCATE 25,5:PRINT "Hi Score  : ";hi
690     LOCATE 1,7:PRINT STRING$(40,208)
700     RETURN
710    'Correct Answer
720     LOCATE #1,16,16:PRINT #1,"CORRECT";
730     score=score+1:ques=ques+1:z9=z9-40
740     GOSUB 820
750     RETURN
760    'Wrong Answer
770     LOCATE #1,10,16:PRINT #1,"WRONG";
780     ques=ques+1
790     GOSUB 840
800     FOR i=1 TO 2000:NEXT i
810     RETURN
820     FOR i=250 TO 1 STEP -5:SOUND 1,i,1,
7:NEXT i
830     RETURN
840     FOR i=500 TO 750 STEP 5:SOUND 1,i,1
,7:NEXT i
850     RETURN
```

17

Area Estimation
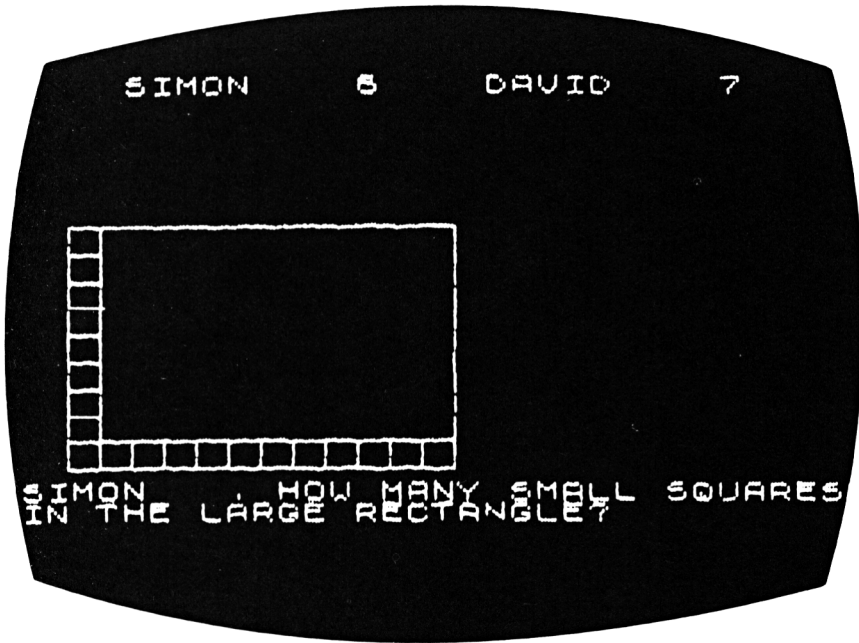
This game might also be called 'little boxes' as you are going to have to decide how many small boxes are required to fill the area of a large rectangular box.

How to play

Type in the names of the 2 players, pressing ENTER after each name.

The computer will then show you a large rectangular box with one small box set in a corner.

You must now decide how many small boxes you require to fill the larger box.

Type in your estimated number and press ENTER.

If you are wrong the computer will fill in one line on the upright (perpendicular) side of the box and ask you to estimate again on the totals required.

If you still don't estimate correctly then the bottom line (horizontal) will be completed.

You should now be able to estimate the total by multiplying the two columns together.

Should you get it right this time you'll get a 'happy' bleep from your computer and you will move on to the next shape. A wrong answer at this stage will mean that the computer will fill in all the boxes and ask you again for the total. The computer will not let you move on until you have provided the correct results. The first player to reach a score of 10 wins the game.

Programming Hints

You can make the game a little easier by reducing the numbers in lines 980 and 990.

Program

```
  10 REM AREA ESTIMATION
  20 MODE 1:BORDER 13
  30 DIM PLAYER$(2),SCORE(2),NUMBER(3)
  40 REM LOOP
  50 SCORE(1)=0:SCORE(2)=0
  60 CLS:GOSUB 410
  70 FOR I=1 TO 2
  80 LOCATE 1,8+I*3:PRINT "What is player
     ";I;"'s name ?";
  90 GOSUB 510:PLAYER$(I)=TEMP1$
 100 NEXT I
 110 CLS:BORDER 15
 120 REM LOOP
 130 FOR GO=1 TO 2
 140 GOSUB 950
 150 PEN 3:CLUES=0
 160 LOCATE 1,8:PRINT PLAYER$(GO);"'s tur
     n                "
```

```
170 PEN 2:LOCATE 1,10:PRINT"How many sma
ll squares in the large rectangle ?
    ";STRING$(9,CHR$(8));
180 PEN 1:GOSUB 510
190 IF VAL(TEMP1$)=HEIGHT*WDTH THEN GOSU
B 600:GOTO 230
200 CLUES=CLUES+1:IF CLUES>3 THEN GOSUB
740:GOTO 230
210 NUM=CLUES:GOSUB 1030
220 GOTO 170
230 IF SCORE(1)>9 OR SCORE(2)>9 THEN GOT
O 250
240 NEXT GO
250 IF SCORE(1)<10 AND SCORE(2)<10 THEN
GOTO 120
260 CLS
270 TEMP=1:IF SCORE(2)>9 THEN TEMP=2
280 CLS:GOSUB 410:GOSUB 340
290 LOCATE 1,8:PRINT PLAYER$(TEMP);" is
the winner"
300 LOCATE 1,16:PRINT"Would you like to
play again (Y/N) ?";
310 TEMP$=INKEY$
315 IF TEMP$="" THEN GOTO 310
320 IF TEMP$<>"N" AND TEMP$<>"n" THEN GO
TO 40
330 CLS:END
340 REM
350 LOCATE 1,5:PRINT PLAYER$(1);":";SCOR
E(1)
360 LOCATE 19,5:PRINT PLAYER$(2);":";SCO
RE(2)
370 RETURN
410 REM
420 LOCATE 1,2:PRINT"AREAS"
430 LOCATE 1,3:PRINT"====="
440 RETURN
510 REM
520 TEMP$="":TEMP1$=""
530 REM LOOP
540 TEMP$=INKEY$
545 IF TEMP$="" THEN GOTO 540
550 TEMP$=UPPER$(TEMP$)
560 IF TEMP$>=" " AND TEMP$<="Z" AND LEN
(TEMP1$)<10 THEN TEMP1$=TEMP1$+TEMP$:PRI
NT TEMP$;
```

```
570 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
  THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
580 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 530
590 RETURN
600 REM
610 FLAG=-1
620 SCORE(GO)=SCORE(GO)+4-CLUES
630 PEN 1
640 FOR I=1 TO 6
650 LOCATE 13,I+1:PRINT"CORRECT"
660 LOCATE 13,I:PRINT"          "
670 SOUND 1,I*40,10
680 SOUND 2,I*40+1,8
690 IF SQ(1)<>4 THEN GOTO 690
700 NEXT I
710 LOCATE 13,7:PRINT"          "
720 FOR J=1 TO 1000:NEXT J
730 RETURN
740 REM
750 PEN 2
760 FOR I=6 TO 1 STEP -1
770 LOCATE 15,I:PRINT"Wrong"
780 LOCATE 15,I+1:PRINT"        "
790 SOUND 1,I*40,10
800 IF SQ(1)<>4 THEN GOTO 800
810 NEXT I
820 LOCATE 15,2:PRINT"It was":LOCATE 16,
3:PRINT HEIGHT*WDTH
830 FOR J=1 TO 1000:NEXT J
840 RETURN
850 REM
860 X=100:Y=100
870 PLOT 600,400,1
880 OX=100:OY=100:X=W:Y=H:GOSUB 920
890 PLOT 600,400,2
900 OX=100:OY=100:X=50:Y=30:GOSUB 920
910 RETURN
920 REM
930 MOVE OX/2,OY/3:DRAWR 0,Y/3:DRAWR X/2
,0:DRAWR 0,-Y/3:DRAWR -X/2,0
940 RETURN
950 REM
960 CLS
980 HEIGHT=INT(RND(1)*14+1)
```

```
990 WDTH=INT(RND(1)*22+1)
1000 H=HEIGHT*30:W=WDTH*50
1010 GOSUB 850
1020 RETURN
1030 REM
1040 IF NUM=1 THEN FOR K=1 TO H STEP 30:
OX=100:OY=99+K:X=50:Y=30:GOSUB 920:SOUND
 1,200,10:SOUND 1,0,3:NEXT K:RETURN
1050 IF NUM=2 THEN FOR K=1 TO W STEP 50:
OX=99+K:OY=100:X=50:Y=30:GOSUB 920:SOUND
 1,100,10:SOUND 1,0,3:NEXT K:RETURN
1060 FOR K=1 TO H STEP 30:FOR L=1 TO W S
TEP 50
1070 OX=99+L:OY=99+K:X=50:Y=30:GOSUB 920
1080 IF SQ(1)<>4 THEN GOTO 1080
1090 SOUND 1,INT(RND(1)*500)+20,5
1095 NEXT L:NEXT K
1100 RETURN
```

18

Number Series


```
TRIES:  2      SCORE:  0



100  85  70  55  40  25
```
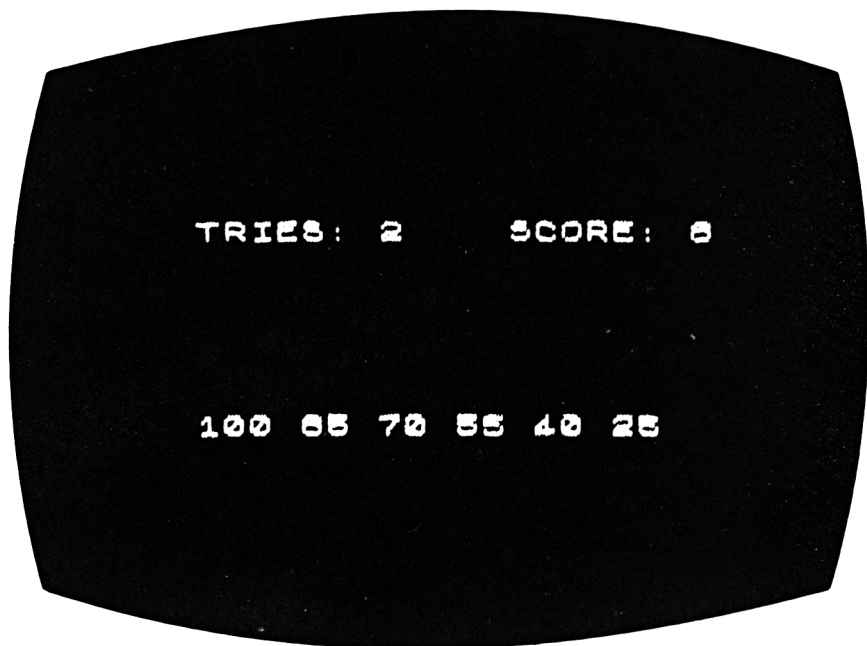
This is a game where you have to think ahead and predict the next numbers to appear on the screen.

Your computer will start to print a string of numbers such as 11, 22, 33, 44 and will then stop and ask you to predict the next numbers which are, of course, 55.

How to play

As soon as you think you know the next number, press any key to stop the sequence then type in your answer and press ENTER.

The correct answer will be rewarded by scoring a point on the board and a wrong answer will mean that the computer will show you the right number before moving on to the next string of numbers. Remember that the quicker you stop the sequence, the

more points you score. As soon as you reach 50 points, the computer will stop and give you your average score.

Programming Notes

As the program is set to choose numbers at random you may sometimes get the same series twice running which is lucky for you as you should know the right answer.

Program

```
1 'Number Series
2 'Copyright (c) VINCE APPS 1984
3 'AMSTRAD CPC 464 version by R.P.Jones
10    GOSUB 280
   :'Initialise
20    GOSUB 310
   :'Header
30    GOSUB 370
   :'Score
40    GOSUB 410
   :'Problem Set-up
50    IF marker THEN tries=tries+1:GOSUB
370:FOR i=1 TO 750:NEXT i:marker=0:GOTO
40
60    GOSUB 600
   :'Check answer
70    IF flag THEN 180 ELSE GOTO 80
80 'Wrong
90  CLS #3:LOCATE #3,14,2:PRINT #3,"W R
O N G !"
100    tries=tries+1
110    GOSUB 370
120      FOR i=1 TO 750
130      NEXT i
140    CLS #3:LOCATE #3,7,2:PRINT #3,"The
correct answer is ";start+rand
150      FOR i=1 TO 750
160      NEXT i
170    GOTO 40
180 'Correct
190    CLS #2:CLS #3
200    tries=tries+1:score=score+1
```

```
210    IF correct>50 THEN 270
220    LOCATE #3,10,2 :PRINT#3,"C O R R E
C T  ! ! !"
230    GOSUB 370
240      FOR i=1 TO 1500
250      NEXT i
260    CLS#2:CLS #3:GOTO 40
270    GOSUB 370:CLS#2:LOCATE #2,5,30:PRIN
T #2,"G A M E   O V E R":STOP
280 'INITIALISATION ROUTINE
290    tries=0:score=0:flag=0
300    RETURN
310 'Clear & Title Screen
320    MODE 1:INK 1,24:INK 0,6:BORDER 9
330    WINDOW #1,1,80,1,5:WINDOW #2,1,80,6
,20:WINDOW #3,1,80,21,25
340    LOCATE #1,13,2:PRINT #1,"NUMBER SER
IES"
350    LOCATE #1,13,3:PRINT #1,STRING$(13,
208)
360    RETURN
370 'Score Routine
380    LOCATE #1,5,5:PRINT #1,"Tries  :  "
;tries
390    LOCATE #1,25,5:PRINT #1,"Score  :
";score
400    RETURN
410 'Problem Set-up
420    LOCATE #2,1,5:PRINT #2,"
                                "
430      CLS#3:LOCATE #3,7,2:PRINT #3,"N e
x t   N u m b e r  . . .";
440    start=1:count=0
450    rand=INT(RND*30)-14
460    IF rand=0 THEN 450
470    IF rand<0 THEN start=100
480    screenx=2
490    GOSUB 630
500    EVERY 50,0 GOSUB 660
510    EI
520    temp$=INKEY$:IF count>9 THEN LOCATE
 #3,7,2:PRINT #3,"         OUT OF TIME
 ":marker=-1:RETURN
530    IF temp$=""THEN 520
540    EVERY 1000,0 GOSUB 690:answer$=""
```
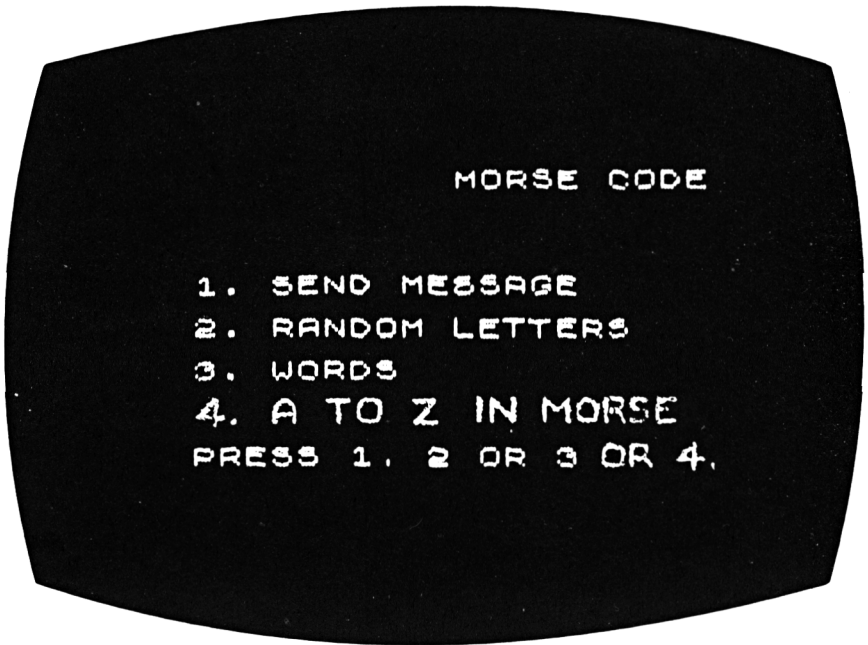
```
550    temp$=INKEY$:IF temp$="" THEN 550
560    IF temp$=CHR$(13) THEN RETURN
570    IF temp$<"0" OR temp$>"9" THEN 500
580    answer$=answer$+temp$:PRINT #3,temp
$;
590    GOTO 550
600    'Check Answer
610    answer=start+rand:IF answer=VAL(ans
wer$) THEN flag=-1 ELSE flag=0
620    RETURN
630    LOCATE #2,screenx,5:PRINT #2,start
640    screenx=screenx+LEN(STR$(start))+1
650    RETURN
660    start=start+rand:count=count+1:IF c
ount>=9 THEN 680
670    GOSUB 630
680    RETURN
690    RETURN
```

19

Morse Code


```
                    MORSE CODE

        1.  SEND MESSAGE
        2.  RANDOM LETTERS
        3.  WORDS
        4. A TO Z IN MORSE
        PRESS 1, 2 OR 3 OR 4,
```

If you are planning to become a sea captain or a pilot then this is the game for you. Even if you are just planning to help your parents on a yachting weekend you will be able to show off with this one.

There is plenty of fun here as well as you can set your own speed of reply to the computer; set your own messages; ask other people to translate what you have sent.

How to play

The computer will put up on the screen a menu which is a list of items from which you can make a choice. Menu is

      1.   Send a message

      2.   Random letters

3. Words

4. A to Z in morse

The computer will ask you to choose from 1, 2, 3 or 4.

You will then be asked to choose a speed which you would like from 1 to 100. As 100 is for professional morse code operators we suggest you start at 10.

Type in 10 and press ENTER

The computer will then ask you for your message.

If you have chosen 1 you could type in MAY THE FORCE BE WITH YOU, press ENTER and the computer will play the message back to you in morse code.

When the message is complete the computer will return to the menu and ask you for your next choice.

No. 2 will mean that the computer will put random letters on the screen whilst sounding them at the same time. If you choose No. 3, words, the computer will sound out a word, at the speed you choose, which you must identify. When the computer completes the word it will ask you to type in the answer. If you are right - well done. If you are wrong however you will hear a nasty 'raspberry' and the computer will show you the correct answer before moving to another word.

Remember that your knowledge of morse code could save lives.

Programming Notes

The words in the program can be changed when typing in the data statements in lines 1420 to 1450.

Notice how the morse code is stored in lines 1380 to 1360. Each of the groups of numbers represents one letter of the alphabet. For example, the letter 'A' is ·—, each 1 is a dot and each 3 is a dash.

Program

```
10 REM Morse Code
20 MODE 1
30 DIM word$(20),morse$(26)
40 RESTORE
50 FOR i=1 TO 26
60 READ morse$(i):NEXT i
70 FOR i=1 TO 20
80 READ word$(i):NEXT i
90 REM loop
100 CLS:GOSUB 340
110 LOCATE 1,7:PRINT"Do you want to :-"
120 LOCATE 1,10:PRINT"1. Send messages"
130 LOCATE 1,12:PRINT"2. Hear random let
ters"
140 LOCATE 1,14:PRINT"3. Hear words"
150 LOCATE 1,16:PRINT"4. See codes"
160 LOCATE 1,18:PRINT"Press 1,2,3 or 4 ?
";
170 REM loop
180 temp$=INKEY$:IF temp$="" THEN GOTO 1
80
190 IF temp$<"1" OR temp$>"4" THEN GOTO
170
200 choice$=temp$
210 IF choice$="4" THEN GOSUB 470:GOTO 9
0
220 REM loop
230 LOCATE 1,21:PRINT"Enter speed for co
de (1-100) ?";
240 GOSUB 380
250 SPED=VAL(temp1$)
260 IF SPED<1 OR SPED>100 THEN GOTO 220
270 CLS:GOSUB 340
280 IF choice$="1" THEN GOSUB 810
290 IF choice$="2" THEN GOSUB 1150
300 IF choice$="3" THEN GOSUB 600
310 FOR i=1 TO 1000
320 NEXT i
330 GOTO 90
340 REM
350 LOCATE 1,2:PRINT"Morse Code"
360 LOCATE 1,3:PRINT"=========="
370 RETURN
380 REM
```

```
390 temp$="":temp1$=""
400 REM loop
410 temp$=INKEY$:IF temp$="" THEN GOTO 4
10
420 temp$=UPPER$(temp$)
430 IF temp$>=" " AND temp$<="Z" AND LEN
(temp1$)<20 THEN temp1$=temp1$+temp$:PRI
NT temp$;
440 IF temp$=CHR$(127) AND LEN(temp1$)>0
 THEN temp1$=LEFT$(temp1$,LEN(temp1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
450 IF temp$<>CHR$(13) OR LEN(temp1$)=0
THEN GOTO 400
460 RETURN
470 REM
480 CLS:GOSUB 340
490 FOR i=1 TO 9
500 con$=morse$(i):GOSUB 1090:lft$=ed$
510 con$=morse$(i+9):GOSUB 1090:mddle$=e
d$
520 IF i<9 THEN con$=morse$(i+18):GOSUB
1090:rght$=ed$
530 LOCATE 4,i*2+4:PRINT CHR$(64+i);" ";
lft$:LOCATE 17,i*2+4:PRINT CHR$(73+i);"
";mddle$;
540 IF i<9 THEN LOCATE 30,i*2+4:PRINT CH
R$(82+i);" ";rght$
550 NEXT i
560 LOCATE 1,24:PRINT"Press a key"
570 IF INKEY$<>"" THEN GOTO 570
580 IF INKEY$="" THEN GOTO 580
590 RETURN
600 REM
610 LOCATE 1,8:PRINT"Get Ready !"
620 FOR i=1 TO 3000:NEXT i
630 LOCATE 1,8:PRINT"Now Listen "
640 rand=INT(RND(1)*20+1)
650 temp2$=word$(rand)
660 FOR k=1 TO LEN(temp2$)
670 temp$=MID$(temp2$,k,1)
680 temp=ASC(temp$)-64
690 LOCATE 31,8:con$=morse$(temp):GOSUB
1090:PRINT ed$;"    ";
700 code=temp:GOSUB 970
710 FOR j=1 TO 1000:NEXT j
720 NEXT
```

```
730 LOCATE 31,8:PRINT CHR$(18)
740 LOCATE 1,8:PRINT"What was the word ?
";
750 GOSUB 380
760 IF temp1$=temp2$ THEN GOSUB 1260 ELS
E GOSUB 1320
770 LOCATE 1,16:PRINT"Press a key"
780 IF INKEY$<>"" THEN GOTO 780
790 IF INKEY$="" THEN GOTO 790
800 RETURN
810 REM
820 LOCATE 1,8:PRINT"What is you message
 ?";CHR$(18):LOCATE 24,8
830 GOSUB 380
840 IF LEN(temp1$)>15 THEN LOCATE 1,8:PR
INT"Too long !!":FOR i=1 TO 2000:NEXT i:
GOTO 820
850 CLS:GOSUB 340
860 FOR k=1 TO LEN(temp1$)
870 temp$=MID$(temp1$,k,1)
875 IF TEMP$<"A" OR TEMP$>"Z" THEN FOR I
=1 TO 200:NEXT I:GOTO 920
880 LOCATE 11,k+6:PRINT temp$:LOCATE 21,
k+6
890 con$=morse$(ASC(temp$)-64):GOSUB 109
0:PRINT ed$
900 code=ASC(temp$)-64:GOSUB 970
910 FOR J=1 TO 300:NEXT J
920 NEXT
930 LOCATE 1,24:PRINT"Press a key"
940 IF INKEY$<>"" THEN GOTO 930
950 IF INKEY$="" THEN GOTO 950
960 RETURN
970 REM
980 en=0
990 FOR i=1 TO 4
1000 bit$=MID$(morse$(code),i,1)
1010 bit=VAL(bit$)
1020 SOUND 1,bit*20+60,bit*6+SPED/20,15+
15*(bit=0)
1030 en=en+bit*8+2*SPED/10
1040 SOUND 1,0,2*SPED/10
1050 NEXT
1060 qq=TIME
1070 IF TIME-qq<en*5 THEN GOTO 1070
1080 RETURN
1090 REM
1100 ed$=""
```

```
1110 FOR j=1 TO LEN(con$)
1120 IF MID$(con$,j,1)="1" THEN ed$=ed$+
"." ELSE IF MID$(con$,j,1)="3" THEN ed$=
ed$+"-"
1130 NEXT
1140 RETURN
1150 REM
1160 LOCATE 1,8:PRINT"Press <SPACE> to s
top, or COPY to hold  a letter"
1170 REM loop
1180 temp$=INKEY$
1190 rand=INT(RND(1)*26+1)
1200 LOCATE 6,14:con$=morse$(rand):GOSUB
 1090:PRINT ed$;CHR$(18):LOCATE 21,14:PR
INT CHR$(RAND+64)
1210 code=rand:GOSUB 970
1220 FOR j=1 TO 800:NEXT j
1230 IF INKEY(9)=0 THEN GOTO 1230
1240 IF temp$<>" " THEN GOTO 1170
1250 RETURN
1260 REM
1270 LOCATE 1,11:PRINT"Correct !!!"
1280 FOR i=100 TO 200 STEP 10
1290 SOUND 1,i,8
1300 NEXT i
1310 RETURN
1320 REM
1330 LOCATE 1,11:PRINT"Wrong !!  It was
";temp2$
1340 FOR i=120 TO 30 STEP -10
1350 SOUND 1,i,8
1360 NEXT i
1370 RETURN
1380 DATA 1300,3111,3131,3110,1000,1131,
3310
1390 DATA 1111,1100,1333,3130,1311,3300,
3100
1400 DATA 3330,1331,3313,1310,1110,3000,
1130
1410 DATA 1113,1330,3113,3133,3311
1420 DATA DELICATESSEN,NECESSITY,DELICIO
US,PREHISTORIC,GOURMET
1430 DATA PHILOSOPHER,PRECIOUS,DISSECT,A
GRICULTURE,SEMAPHORE
1440 DATA DIFFICULT,BUSINESS,MONASTERY,F
RAGILE,ALPHABET
1450 DATA DAFFODIL,KNOWLEDGE,THROUGH,PIN
EAPPLE,KANGAROO
```

20

Areas
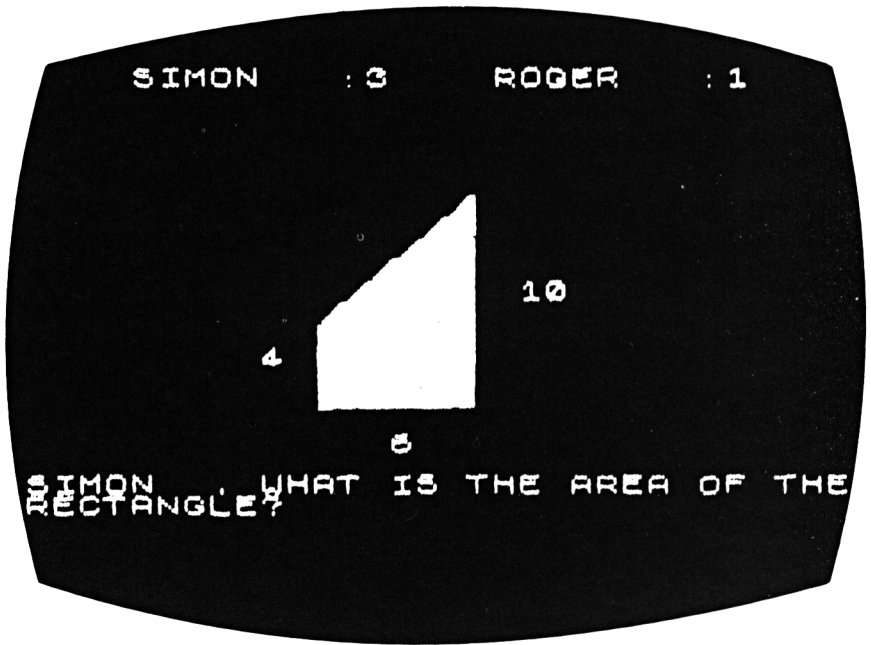
This game is a bit of a brain teaser and might drive you mad before you start to get it right. To begin with you might even need a pencil and some paper but really that is a bit of a cheat.

The object is to work out the total area of a rectangle and a triangle - together. Your parents will be highly impressed when you can tell them how much carpet they need for that funny shaped room upstairs.

How to play

You will be asked 'One or two players?'

Type in 1 or 2 and press ENTER.

You will then be asked for the player's, or players', names.

ENTER as before.

The computer will then show you a green rectangle with a red triangle on top. You will be given the length of each of the sides and asked to work out the total area.

If you do not get the answer correct first time the computer will then ask you to give the area of the rectangle first. If you answer this part correctly you will then be shown the triangle again and asked for its area. If either part of your answer is wrong the computer will give you the correct total area sum.

If you get the answer right first time, clever clogs, you will be given two points but if you answer in two halves you will get only one point for your correct answers.

To help you bend the rules the formula for area is

$$C \times B + \frac{1}{2} B \times (A - C)$$

Program

```
10 REM Areas
20 MODE 1
30 DIM PLAYER$(2),SCORE(2),NUMBER(3)
40 REM LOOP
50 SCORE(1)=0:SCORE(2)=0
60 CLS:GOSUB 550
70 FOR I=1 TO 2
80 LOCATE 1,8+I*3:PRINT"What is player "
;I;"'s name ?";
90 GOSUB 650:PLAYER$(I)=TEMP1$
100 NEXT I
110 CLS
120 REM LOOP
130 FOR GO=1 TO 2
135 CLS
140 REM LOOP
150 A=INT(RND(1)*6+4):B=INT(RND(1)*7+3):
C=INT(RND(1)*4+3)
160 IF C>=A THEN GOTO 140
170 SCREENA=A*50:SCREENB=B*50:SCREENC=C*
50
```

```
180 MOVE 50,30:DRAWR SCREENB/2,0,1:DRAWR
 0,SCREENA/3:DRAWR -SCREENB/2,(SCREENC-S
CREENA)/3:DRAW 50,30
200 MOVE 50,30+SCREENC/3:DRAWR SCREENB/2
,0,2
220 PEN 3
230 LOCATE 1,25-C:PRINT C
240 LOCATE (B-1)/2+2,25:PRINT B
250 LOCATE B+2,24-A:PRINT A
260 GOSUB 550
270 PEN 2:LOCATE 8,1:PRINT PLAYER$(GO);"
's turn"
280 PEN 3
290 GOSUB 520
300 LOCATE 1,9:PRINT"What is the total a
rea ?";
310 GOSUB 650
320 ANSWER=VAL(TEMP1$)
330 IF ANSWER=B*C+B/2*(A-C) THEN AMOUNT=
2:GOSUB 740:GOTO 500 ELSE GOSUB 870
340 LOCATE 1,9:PRINT"What is the area of
 the rectangle ?";
350 GOSUB 650
360 ANSWER=VAL(TEMP1$)
370 IF ANSWER<>B*C THEN LOCATE 1,9:PRINT
"The area of the rectangle is ";c*b;"
      ":GOSUB 870:GOTO 500
380 FOR i=160 TO 220 STEP 20:SOUND 1,I,3
0:NEXT I
390 LOCATE 1,9:PRINT SPACE$(50)
400 LOCATE 1,9:PRINT"What is the area of
 the triangle ?";
410 GOSUB 650
420 ANSWER=VAL(TEMP1$)
430 IF ANSWER<>B/2*(A-C) THEN LOCATE 1,9
:PRINT"The area of the triangle is ";b/2
*(a-c);"           ":GOSUB 870:GOTO 500
440 FOR I=160 TO 220 STEP 20:SOUND 1,I,3
0:NEXT I
450 LOCATE 1,9:PRINT SPACE$(50)
460 LOCATE 1,9:PRINT"What is the total a
rea then ?";
470 GOSUB 650
480 ANSWER=VAL(TEMP1$)
490 IF ANSWER=B*C+B/2*(A-C) THEN AMOUNT=
1:GOSUB 740 ELSE GOSUB 870
```

```
500 NEXT GO
510 GOTO 120
520 REM
530 LOCATE 1,5:PRINT PLAYER$(1);":";SCOR
E(1):LOCATE 1,6:PRINT PLAYER$(2);":";SCO
RE(2)
540 RETURN
550 REM
560 LOCATE 1,2:PRINT"AREAS"
570 LOCATE 1,3:PRINT"====="
580 RETURN
650 REM
660 TEMP$="":TEMP1$=""
670 REM LOOP
680 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 6
80
690 TEMP$=UPPER$(TEMP$)
700 IF TEMP$>=" " AND TEMP$<="Z" AND LEN
(TEMP1$)<8 THEN TEMP1$=TEMP1$+TEMP$:PRIN
T TEMP$;
710 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
720 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 670
730 RETURN
740 REM
750 SCORE(GO)=SCORE(GO)+AMOUNT
760 PEN 1
770 FOR I=1 TO 6
780 LOCATE 15,I+18:PRINT"CORRECT"
790 LOCATE 15,I+17:PRINT"        "
800 SOUND 1,I*40,10
810 SOUND 2,I*40-10,8
820 IF SQ(1)<>4 THEN GOTO 820
830 NEXT I
840 LOCATE 15,24:PRINT"         "
850 FOR J=1 TO 1000:NEXT J
860 RETURN
870 REM
880 PEN 2
890 FOR I=6 TO 1 STEP -1
900 LOCATE 15,I+17:PRINT"WRONG"
910 LOCATE 15,I+18:PRINT"      "
920 SOUND 1,I*40,5
930 IF SQ(1)<>4 THEN GOTO 930
```
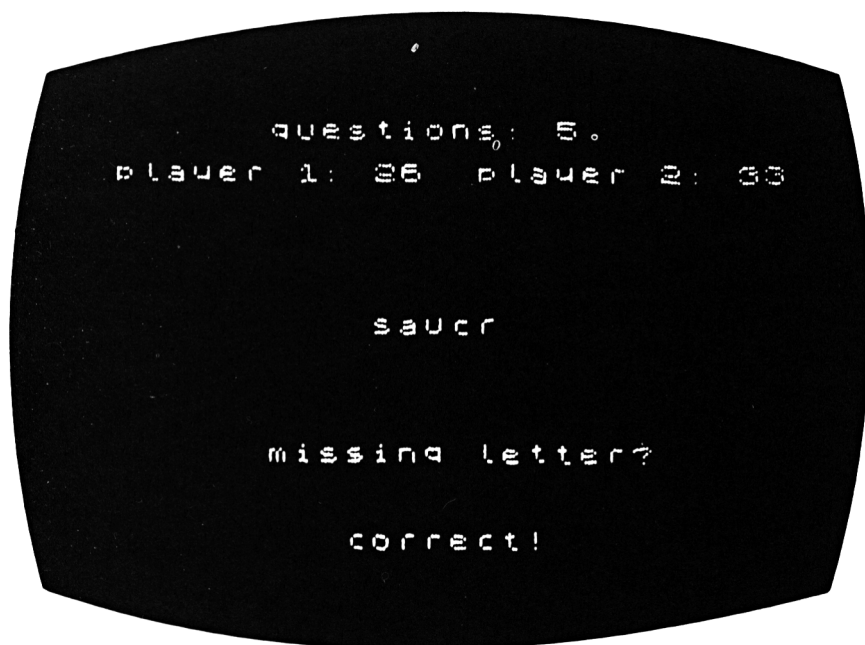
```
940 NEXT I
950 LOCATE 15,18:PRINT"        "
960 PEN 3
970 FOR J=1 TO 1000:NEXT J
980 RETURN
```

21

Missing Letter

If you are one of those poor souls who are always being told by someone that you miss letters in words don't worry too much because it's supposed to mean that you are clever and that your brain works faster than your hands. However, it's not a good idea to go on doing it so we have invented this game to help you.

Words are going to appear on the screen and you are going to have to spot the missing letter.

An example

        sper   should be   spear

How to play

Your computer will ask you 1 or 2 players?

Type in 1 or 2 and press ENTER.

In the middle of the screen will appear a word with a letter missing.

To complete the word you press the letter of your choice.

It is **not necessary** to press the ENTER key

If your answer is correct the computer will tell you that your decision was correct, award you a number of points depending on the speed of your response and move on to the next word.

Wrong answers will mean no points and the computer will move on to the other player - if there are two playing.

Programming Notes

It is possible to change the words used in the program by replacing those in the data statements of lines 10 to 70 with your own selection. If you increase the number of words though, change the 50 in lines 80, 90 and 470 to match the total number of words.

Program

```
1 'Missing Letter
2 'Copyright (c) VINCE APPS 1984
3 'AMSTRAD CPC 464 version by R.P.Jones
10    DATA HORSE,STREET,DAILY,MONEY,PEOPLE
,YELLOW,BOTTLE,ORANGE,SAUCER
20    DATA BREAKFAST,COMPASS,KITTEN,ENGINE
,HISTORY,SAUSAGE,ADDRESS,CEILING
30    DATA EXPERT,MYSTERY,COMPUTER,PROMISE
,CLOWN,MESSAGE,EARLY,LISTEN
40    DATA MAGIC,SCHOOL,TOMORROW,KETTLE,DE
TACH,MECHANIC,CYLINDER,SCIENTIFIC
50    DATA ILLOGICAL,GIRAFFE,PARSLEY,TRIAN
GLE,LEGIBLE,MEDICINE,PRESENCE
60    DATA TROPICAL,PENGUIN,ALPHABET,DAFFO
DIL,KNOWLEDGE,YACHT,FIERY,KANGAROO
70    DATA RASBERRY,CHRISTMAS
80    DIM WORD$(50),PLAYER$(2),SCORE(2)
90     FOR I=1 TO 50
```

```
100      READ word$(i)
110     NEXT
120   score(1)=0:score(2)=0:question=1
130 'Main Routine
140    GOSUB 220
150    GOSUB 270
160    GOSUB 310
170    control=1
180    GOSUB 430
190    GOSUB 530
200    GOSUB 650
210   IF flag THEN 690 ELSE GOTO 760
220 'Clear and title screen
230    MODE 1:LOCATE 13,2:PRINT "MISSING L
ETTER"
240    LOCATE 13,3:PRINT STRING$(14,208)
250    WINDOW #1,1,40,8,16:WINDOW #2,1,40,
17,24
260    RETURN
270 'Score Routine
280    LOCATE 14,5:PRINT "Question ";Quest
ion
290    LOCATE 1,7:PRINT "Player 1 : ";scor
e(1):LOCATE 25,7:PRINT "Player 2 : ";sco
re(2)
300    RETURN
310 'Players Names
320    LOCATE #1,5,2:PRINT #1,"How many pl
ayers (1 or 2) ? ";
330    z$=INKEY$:IF z$="" THEN 330
340    IF z$<"1" OR z$>"2" THEN 330
350    PRINT #1,z$;:z9=VAL(z$)
360    LOCATE #1,1,5
370      FOR i=1 TO VAL(z$)
380        PRINT #1,"What is player ";i;"'s
 name ";
390        INPUT #1,player$(i)
400        PRINT #1,CHR$(13)
410      NEXT i
420    RETURN
430 'Generate and Display Word
440    IF (control MOD 2)=0 AND z9=2 THEN
z=2 ELSE z=1
450    CLS #1
460    PRINT #2,"It is ";player$(z);"'s go
"
```

```
470   word=INT(RND*50)+1
480   word$=word$(word)
490   ps=INT(RND*5)+1
500   word$=MID$(word$,1,ps-1)+MID$(word$
,ps+1)
510   LOCATE #1,(40-LEN(word$))/2,3:PRINT
 #1,word$
520   RETURN
530   'Enter answer
540   LOCATE #2,10,3:PRINT #2,"Enter Miss
ing Letter"
550   LOCATE #2,20,5
560   bonus=0
570   EVERY 50,0 GOSUB 860
580   EI
590   answer$=""
600   z$=INKEY$:IF z$=""THEN 600
610   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
620   IF z$=CHR$(13) THEN PRINT #2,CHR$(1
3):RETURN
630   IF (z$<"A" OR z$>"Z") AND z$<>"-" A
ND (z$<"0" OR z$>"9") AND z$<>" " THEN 6
00
640   answer$=answer$+z$:PRINT #2,z$;:DI:
RETURN
650   'Ckeck Answer
660   flag=0
670   IF answer$=MID$(word$(word),ps,1) T
HEN flag=-1
680   RETURN
690   'Correct
700   score(z)=score(z)+100-bonus:IF ques
tion<>20 THEN question=question+1
710   GOSUB 270
720   control=control+1
730   CLS #1:CLS #2
740   IF question=20 THEN LOCATE #1,10,5:
PRINT #1,"E N D   O F   G A M E":STOP
750   GOTO 180
760   'Wrong
770   IF question<>20 THEN question=quest
ion+1:control=control+1
780   GOSUB 270
790   CLS #1:CLS #2
```
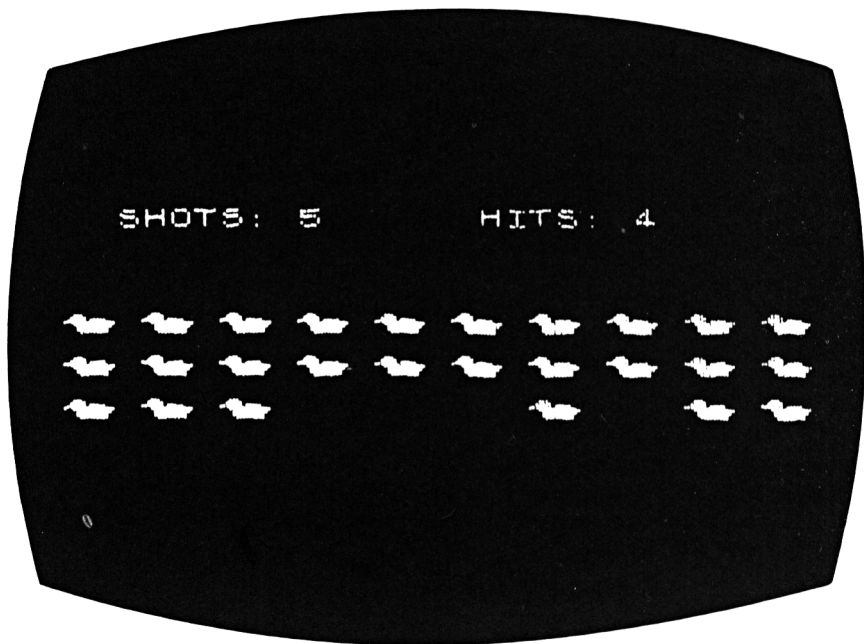
```
800   LOCATE #1,5,5:PRINT #1,"NO! The mis
sing letter is ";MID$(word$(word),ps,1)
810    FOR i=1 TO 2000
820    NEXT i
830   control=control+1
840   IF question=20 THEN CLS #1:LOCATE #
1,10,5:PRINT #1,"E N D   O F   G A M E":S
TOP
850   GOTO 180
860   bonus=bonus+1:RETURN
```

22

Duck Shoot

Here is a game for your memory, your speed and your eyesight.

You will be shown a screen full of ducks - thirty in total - and then you will have to solve a multiplication sum before you can shoot at the sitting ducks.

Just in case you are worried about the ducks - they are not real, we borrowed them from a fairground.

How to play

You will be asked to solve a multiplication table which will be selected at random by your computer. If you get the answer right and type in properly you will be allowed to shoot at the ducks.

It is not as simple as it sounds however because the gun moves from left to right and back again. You have to stop the gun which will fire on its own at the row of ducks. If you stop the gun in the wrong place the shot may go between a row of the 'quackers' and leave you without a score despite your correct answer to the sum.

To stop the gun you must press the space bar.

Your score board will show you how many shots were on target.

The trick is to be clever - and fast.

Program

```
10 REM DUCK SHOOT
20 MODE 1
25 DIM SAR(40,25)
30 SHOTS=0:HITS=0
40 GOSUB 460
50 GOSUB 400
60 REM LOOP
70 RAND1=INT(RND(1)*12+1)
80 RAND2=INT(RND(1)*12+1)
90 REM LOOP
100 PAPER 1:PEN 0:LOCATE 1,1:PRINT"SHOTS
:";SHOTS:LOCATE 27,1:PRINT"HITS:";HITS
110 PAPER 0:PEN 1
120 LOCATE 12,18:PRINT"What is ";RAND1;"
 x ";RAND2;" ?";
130 GOSUB 310
140 LOCATE 12,18:PRINT CHR$(18)
150 IF VAL(TEMP1$)<>RAND1*RAND2 THEN GOT
O 90
160 SOUND 1,200,100
170 SOUND 2,220,95
175 IF SQ(1)<>4 THEN GOTO 175
180 GOSUB 530
190 LOCATE BASE,21:PRINT" "
200 IF HITS<>30 THEN GOTO 60
210 LOCATE 17,11:PRINT"W E L L"
220 LOCATE 17,13:PRINT"D O N E"
230 FOR I=1 TO 7
240 INK 1,I
250 INK 0,7-I
```

```
260 SOUND 1,I*30,35
270 IF SQ(1)<>4 THEN GOTO 270
280 NEXT I
290 END
310 REM
320 TEMP$="":TEMP1$=""
330 REM LOOP
340 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 3
40
350 TEMP$=UPPER$(TEMP$)
360 IF TEMP$>=" " AND TEMP$<="Z" AND LEN
(TEMP1$)<5 THEN TEMP1$=TEMP1$+TEMP$:PRIN
T TEMP$;
370 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
380 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 330
390 RETURN
400 REM
401 FOR I=1 TO 40:FOR J=1 TO 25:SAR(I,J)
=0:NEXT J:NEXT I
410 FOR I=6 TO 34 STEP 3
420 FOR J=7 TO 11 STEP 2
430 LOCATE I,J:PRINT CHR$(224);CHR$(225)
435 SAR(I,J)=224:SAR(I+1,J)=225
440 NEXT J:NEXT I
450 RETURN
460 REM
465 SYMBOL AFTER 224
470 SYMBOL 224,28,62,254,31,15,7,3
480 SYMBOL 225,0,0,248,255,254,252,252,2
40
490 SYMBOL 226,0,24,24,60,255,255,255,25
5
520 RETURN
530 REM
540 BASE=4:INC=1
550 REM LOOP
560 LOCATE BASE,21:PRINT" ";
570 BASE=BASE+INC
580 IF BASE>34 OR BASE<5 THEN INC=-INC
590 LOCATE BASE,21:PRINT CHR$(226)
595 Q=20
600 IF INKEY$=" " THEN GOTO 610
605 Q=Q-1:IF Q=0 THEN GOTO 550 ELSE GOTO
 600
```

```
610 SHOTS=SHOTS+1
620 SOUND 1,0,15,7,0,0,5
630 J=20
640 IF SAR(BASE,J)=224 THEN LOCATE BASE,
J:PRINT"   ":SAR(BASE,J)=0:SAR(BASE+1,J)=
0:GOTO 720
650 IF SAR(BASE,J)=225 THEN LOCATE BASE-
1,J:PRINT"   ":SAR(BASE,J)=0:SAR(BASE-1,J
)=0:GOTO 720
660 LOCATE BASE,J:PRINT"."
670 FOR K=1 TO 40:NEXT K
680 LOCATE BASE,J:PRINT" "
690 J=J-1:IF J<>5 THEN GOTO 640
710 RETURN
720 FOR I=160 TO 230 STEP 10
730 SOUND 1,I,20
740 IF SQ(1)<>4 THEN GOTO 740
745 NEXT I
750 HITS=HITS+1
760 RETURN
```

23

Missing Numbers
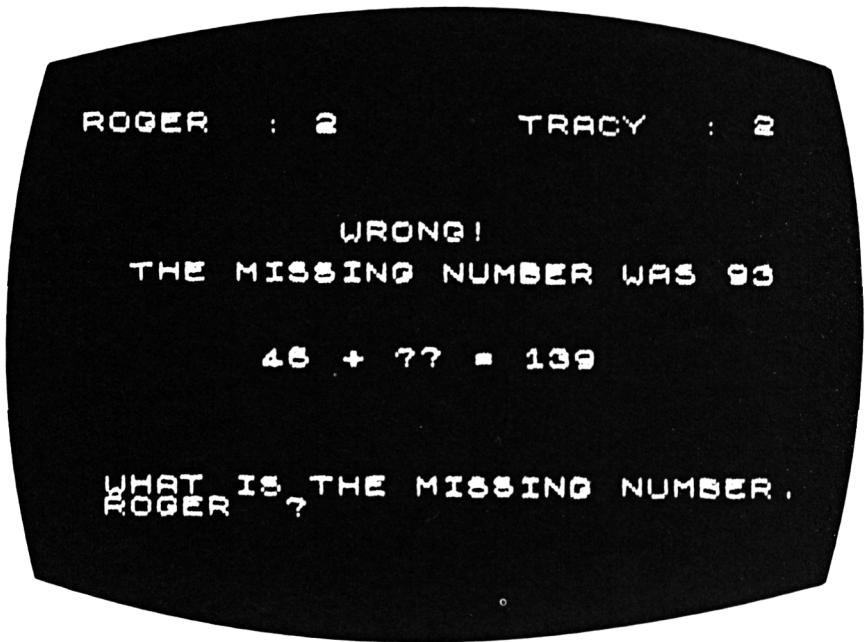
A competition designed to see who is quickest between two players at working out the missing number. You can play on your own but it's no fun if there isn't anyone to show off to.

You'll be given a selection of sums and you will have to provide the number that has been replaced by a question mark.

Examples:

$$234 + ? = 563$$

$$? - 56 = 834$$

$$169 - 73 = ?$$

How to play

You will be asked the players' names which you type in, and press ENTER.

The computer will then ask you a question of the type shown above.

Type in your answer and press **ENTER.**

Players will be asked questions alternately.

A wrong answer will mean a 'raspberry' buzz and the next question will move to your opponent.

Scores are shown on the screen.

Program

```
10 REM MISSING NUMBER
20 MODE 1
30 DIM PLAYER$(2),SCORE(2),NUMBER(3)
50 REM LOOP
60 SCORE(1)=0:SCORE(2)=0
70 CLS:GOSUB 520
80 MX=89:MN=10
90 FOR I=1 TO 2
100 LOCATE 1,8+I*3:PRINT"What is player
"; I;"'s name ?";
110 GOSUB 560:PLAYER$(I)=TEMP1$
120 NEXT I
130 REM LOOP
140 FOR GO=1 TO 2
150 CLS:GOSUB 520
160 GOSUB 480
170 LOCATE 1,8:PRINT PLAYER$(GO);"'s tur
n"
180 REM LOOP
190 NUMBER(1)=INT(RND(1)*MX+MN+1)
200 NUMBER(2)=INT(RND(1)*MX+MN+1)
210 SIGN=1:IF RND(1)>0.5 THEN SIGN=-1
220 NUMBER(3)=NUMBER(1)+NUMBER(2)*SIGN
230 IF NUMBER(3)<0 THEN GOTO 180
```

```
240 RAND=INT(RND(1)*3)+1
250 FOR I=1 TO 3
260 TEMP$=STR$(NUMBER(I))
270 IF RAND=I THEN TEMP$="??":IF I=3 AND
    NUMBER(3)>99 THEN TEMP$="???"
280 LOCATE I*11-3,12:PRINT TEMP$
300 NEXT I
310 LOCATE 15,12:IF SIGN=-1 THEN PRINT"-
    " ELSE PRINT"+"
330 LOCATE 26,12:PRINT"="
350 LOCATE 1,18:PRINT"What is the missin
    g number ?";
360 GOSUB 560:VLUE=VAL(TEMP1$)
370 IF VLUE=NUMBER(RAND) THEN GOSUB 650
    ELSE GOSUB 760
380 IF SCORE(1)=20 OR SCORE(2)=20 THEN G
    OTO 400
390 NEXT GO
400 IF SCORE(1)<>20 AND SCORE(2)<>20 THE
    N GOTO 130
410 TEMP=1:IF SCORE(2)=20 THEN TEMP=2
420 CLS:GOSUB 520:GOSUB 480
430 LOCATE 1,8:PRINT PLAYER$(TEMP);" is
    the winner"
440 LOCATE 1,16:PRINT"Would you like to
    play again (Y/N) ?";
450 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 4
    50
460 IF TEMP$<>"N" AND TEMP$<>"n" THEN GO
    TO 50
470 CLS:END
480 REM
490 LOCATE 1,5:PRINT PLAYER$(1);":";SCOR
    E(1)
500 LOCATE 19,5:PRINT PLAYER$(2);":";SCO
    RE(2)
510 RETURN
520 REM
530 LOCATE 1,2:PRINT"MISSING NUMBER"
540 LOCATE 1,3:PRINT"============="
550 RETURN
560 REM
570 TEMP$="":TEMP1$=""
580 REM LOOP
590 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 5
    90
```

```
600 TEMP$=UPPER$(TEMP$)
610 IF TEMP$>=" " AND TEMP$<="Z" AND LEN
(TEMP1$)<15 THEN TEMP1$=TEMP1$+TEMP$:PRI
NT TEMP$;
620 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
630 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 580
640 RETURN
650 REM
660 SCORE(GO)=SCORE(GO)+1
670 FOR I=1 TO 6
680 LOCATE 14,21:PRINT"CORRECT !!"
690 LOCATE 14,22:PRINT"----------"
700 SOUND 1,I*40,10
710 SOUND 2,I*40-10,8
720 IF SQ(1)<>4 THEN GOTO 720
730 NEXT I
740 FOR J=1 TO 3000:NEXT J
750 RETURN
760 REM
770 FOR I=6 TO 1 STEP -1
780 LOCATE 6,21:PRINT"Wrong !      It was
 ";number(rand)
800 SOUND 1,I*40,10
810 SOUND 2,I*40-5,5
820 IF SQ(1)<>4 THEN GOTO 820
830 NEXT I
840 FOR J=1 TO 3000:NEXT J
850 RETURN
```

24

Hangman
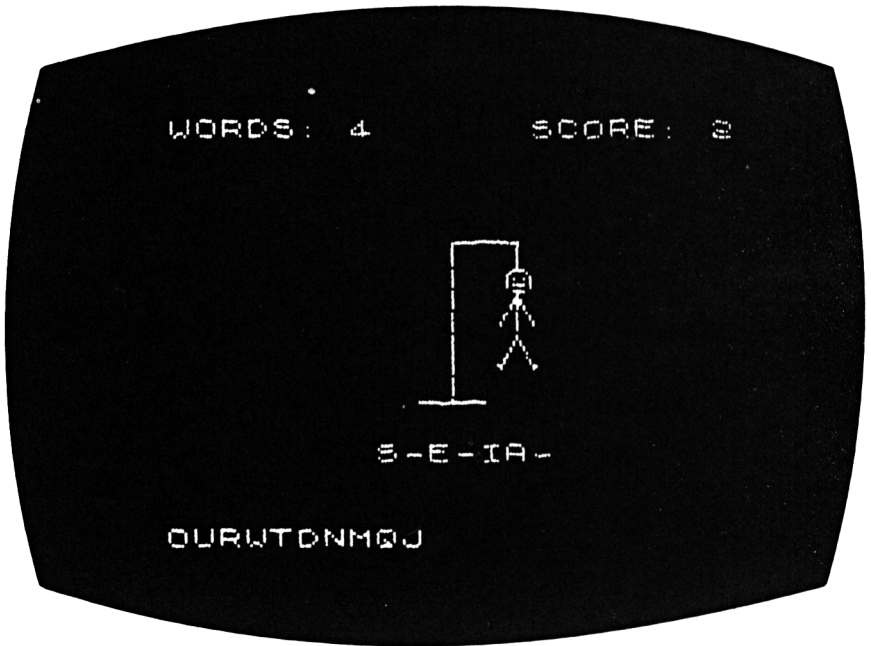
This is a game you may have played before using paper and pencil but now you are up against a computer.

The object of the game is to spell out a word correctly, in as few moves as possible, to save a man from being hanged. Every correct answer helps to complete the word, every wrong answer helps to hang the poor man.

You can, if you wish, change the title to hangwoman.

How to play

The computer will put on the screen a five or more letter word and will ask you for a letter to help fill in the blanks.

You don't need to press the ENTER key, just type the letter of your choice and the computer will do the rest.

Each letter you get right will be filled in but each letter you get wrong will help to complete the gallows, the rope and the victim.

The computer will also show the letters you have chosen incorrectly so that you don't choose them again and hang the man in error.

Scores are kept at the top of the screen.

Remember - think before you print - it could save a life.

Programming Notes
The words for selection can be changed when typing in the data in lines 900 to 990. If you increase the number of words, change the 50 in lines 20, 30 and 120 to match the total number of words.

Program

```
10 REM HANGMAN
20 RESTORE
30 ALPHA$="ABCDEFGHIJKLMNOPQRSTUVWXYZ"
40 MODE 2
50 LOCATE 1,1:FOR L=1 TO 10:PRINT"MAN-HA
NG";:NEXT L
60 LOCATE 1,3:PRINT"LETTERS STILL NOT US
ED      :"
70 LOCATE 1,6:PRINT"BITS OF WORD GUESSED
 SO FAR :"
80 READ NUMBER
90 FOR L=1 TO RND(1)*NUMBER+1
100 READ WORD$:NEXT L
110 NUM=1
120 DONE=LEN(WORD$)
130 GUESS$=""
140 FOR L=1 TO LEN(WORD$):GUESS$=GUESS$+
"-":NEXT L
150 LOCATE 35,3:PRINT ALPHA$
160 LOCATE 35,6:PRINT GUESS$
170 IF INKEY$<>"" THEN GOTO 170
```

```
180 LETTER$=INKEY$:IF LETTER$="" THEN GO
TO 180
190 IF LETTER$>="a" AND LETTER$<="z" THE
N LETTER$=CHR$(ASC $(LETTER$)-ASC("a")+A
SC("A"))
200 IF LETTER$<"A" OR LETTER$>"Z" THEN S
OUND 1,400,4:GOTO 170
210 PS=ASC(LETTER$)-ASC("A")+1
220 IF MID$(ALPHA$,PS,1)=" " THEN SOUND
1,600,4:GOTO 170
230 ALPHA$=LEFT$(ALPHA$,PS-1)+" "+RIGHT$
(ALPHA$,26-PS)
240 FLAG=0
250 FOR L=1 TO LEN(WORD$)
260 IF MID$(WORD$,L,1)<>LETTER$ THEN GOT
O 300
270 FLAG=1
280 DONE=DONE-1
290 GUESS$=LEFT$(GUESS$,L-1)+LETTER$+RIG
HT$(GUESS$,LEN(WORD$)-L)
300 NEXT L
310 IF DONE=0 THEN GOTO 370
320 IF FLAG=1 THEN GOTO 150
330 GOSUB 450
340 IF NUM<>9 THEN GOTO 150
350 PEN 1:LOCATE 20,8:PRINT"YOU FAILED T
O SAVE THE POOR MAN !?"
360 GOTO 400
370 LOCATE 35,6:PRINT WORD$
380 LOCATE 20,8:PRINT"YOU GOT IT RIGHT "
390 IF NUM>6 THEN LOCATE 25,9:PRINT"( TH
AT WAS CLOSE ! )"
400 LOCATE 15,10:PRINT"PRESS <SPACE> TO
HAVE ANOTHER GO"
410 IF INKEY$=" " THEN GOTO 410
420 IF INKEY$<>" " THEN GOTO 420
430 RUN
440 END
450 REM DRAW THE EIGHT PARTS
460 PLOT 1,1,1
470 ON NUM GOSUB 500,540,590,630,680,700
,740,770
480 NUM=NUM+1
490 RETURN
500 PLOT 1,200:DRAW 1,1
510 DRAW 260,1
```

```
520 PLOT 40,1:DRAW 1,30
530 RETURN
540 PLOT 170,2:DRAW 173,25
550 PLOT 230,2:DRAW 227,25
560 PLOT 160,30:DRAW 160,25
570 DRAW 240,25:DRAW 240,30
580 RETURN
590 PLOT 1,200:DRAW 200,200
600 DRAW 200,160
610 PLOT 1,160:DRAW 40,200
620 RETURN
630 PLOT 180,160:DRAW 220,160
640 DRAW 220,120:DRAW 180,120
650 DRAW 180,160
660 FACE=1:GOSUB 800
670 RETURN
680 PLOT 200,120:DRAW 200,50
690 RETURN
700 PLOT 165,75:DRAW 170,75
710 DRAW 200,100:DRAW 230,75
720 DRAW 235,75
730 RETURN
740 PLOT 170,25:DRAW 200,50
750 DRAW 230,25
760 RETURN
770 PLOT 2,2,0:GOSUB 540
780 FACE=0:GOSUB 800
790 RETURN
800 REM DRAW FACE '1' OR FACE '0'
810 PLOT 188,152,FACE:DRAW 192,152
820 DRAW 192,148:DRAW 188,148:DRAW 188,1
52
830 PLOT 208,152:DRAW 212,152
840 DRAW 212,148:DRAW 208,148:DRAW 208,1
52
850 PLOT 200,137:DRAW 200,144
860 PLOT 188,135:DRAW 190,130
870 DRAW 210,130:DRAW 212,135
880 IF FACE=1 THEN RETURN
890 PLOT 188,150,1-FACE:DRAW 192,150
900 PLOT 190,148:DRAW 190,152
910 PLOT 208,150:DRAW 212,150
920 PLOT 210,148:DRAW 210,152
930 PLOT 200,137:DRAW 200,144
940 PLOT 188,125:DRAW 190,130
950 DRAW 210,130:DRAW 212,125
```

```
960 RETURN
970 DATA 20
980 DATA SCHOOL,TOMORROW,ADDRESS,LENGTH
990 DATA KETTLE,COMPUTER,LEGIBLE,MEDICIN
E
1000 DATA SKY,QUESTION,MAINFRAME,CYLINDE
R
1010 DATA TENANTS,PROPORTION,SEPTEMBER
1020 DATA EXHAUST,RASPBERRY,FRAGILE,PAVE
MENT
1030 DATA CUSHION
```

25

Organ
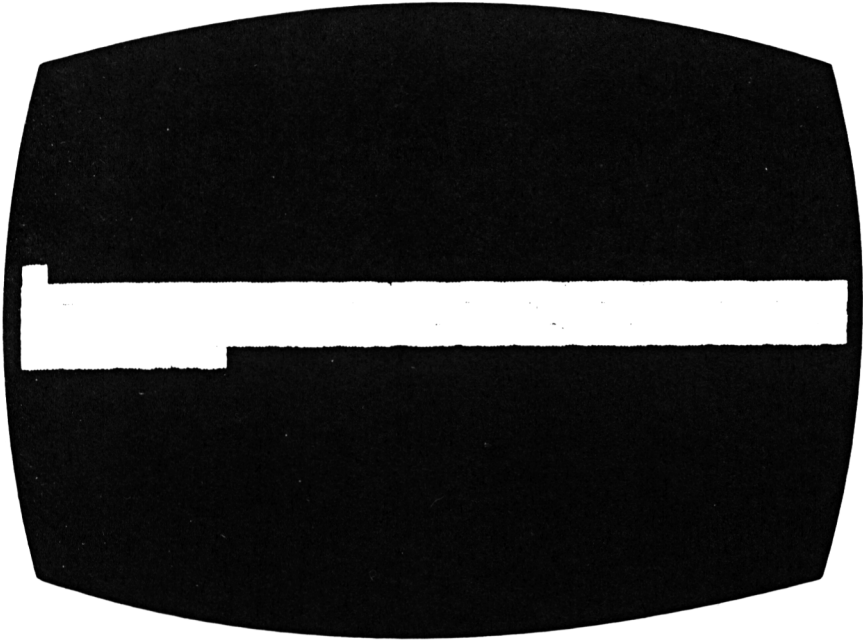
Here is your chance to become the next Stevie Wonder, Mozart or maybe just play 'Happy Birthday' to your parents on your computer.

You'll be able to type your own tunes into the computer's memory and have them played back to you.

How to play

The top two lines on your computer, beginning Q and A are your keyboard and represent the keys of a piano. The top line beginning with Q represents the black keys and the bottom row beginning with A corresponds to the white keys.

When you have finished your tune and wish to replay, press X and the computer will play back the whole tune for you.

Instructions on how to clear the memory, and write a new tune, will appear on the screen.

To change octaves press F0 for low, F1 for medium and F2 for high.

Program

```
10 REM ORGAN
20 MODE 1
30 DIM KY(19),NTE(19)
40 MEMORY &4FFF:MUSIC=&5000
50 FOR I=1 TO 19
60 READ KY(I)
70 NTE(I)=200-8*I
90 NEXT I
100 CLS:GOSUB 340
110 OCTAVE=0:BAR=0
120 FLAG=0:POKE MUSIC,0
130 GOSUB 380
140 GOSUB 420
150 LOCATE 13,20:PRINT"'1' = LOW"
160 LOCATE 13,21:PRINT"'2' = MEDIUM"
170 LOCATE 13,22:PRINT"'3' = HIGH"
180 LOCATE 14,23:PRINT"'X' = Stop and re
play"
190 LOCATE 14,24:PRINT"RECORDING ";
200 REM LOOP
210 FLAG=0
230 IF INKEY(64)=0 THEN OCTAVE=0:GOSUB 4
20
240 IF INKEY(65)=0 THEN OCTAVE=2:GOSUB 4
20
250 IF INKEY(57)=0 THEN OCTAVE=4:GOSUB 4
20
260 IF INKEY(63)=0 THEN POKE MUSIC+BAR,2
55:GOSUB 540:CLS:GOTO 100
270 FOR I=1 TO 19
280 IF INKEY(KY(I))=0 THEN N=NTE(I):GOSU
B 480
290 NEXT I
300 POKE MUSIC+BAR,0
310 IF BAR>&47FF THEN GOSUB 540
320 GOTO 200
```

```
330 END
340 REM
350 LOCATE 1,2:PRINT"ORGAN":LOCATE 29,2:
PRINT"ORGAN"
360 LOCATE 1,3:PRINT"=====":LOCATE 29,3:
PRINT"====="
370 RETURN
380 REM
390 LOCATE 4,6:PRINT"Q  W  E  R  T  Y  U
   I  O  P"
400 LOCATE 5,9:PRINT"A  S  D  F  G  H  J
   K  L"
410 RETURN
420 REM
430 IF OCTAVE=0 THEN TEMP$="Low    "
440 IF OCTAVE=2 THEN TEMP$="Medium"
450 IF octave=4 THEN temp$="High   "
460 LOCATE 9,16:PRINT "Octave - ";TEMP$
470 RETURN
480 REM
490 FLAG=-1
500 SOUND 1,10*(4-OCTAVE)+N,10
510 POKE MUSIC+BAR,10*(4-OCTAVE)+N
520 BAR=BAR+1
530 RETURN
540 REM
550 LOCATE 14,25:PRINT"Playback";
560 i=0
570 NTE=PEEK(MUSIC+I)
580 SOUND 1,NTE,10
585 IF SQ(1)<>4 THEN GOTO 585
590 I=I+1
600 IF PEEK(MUSIC+I)<>255 AND I<>&5000 T
HEN GOTO 570
610 FOR I=1 TO 2000:NEXT I
620 RETURN
630 DATA 67,59,58,50,51,43,42,35,34,27
640 DATA 69,60,61,53,52,44,45,37,36
```

26

Anagram
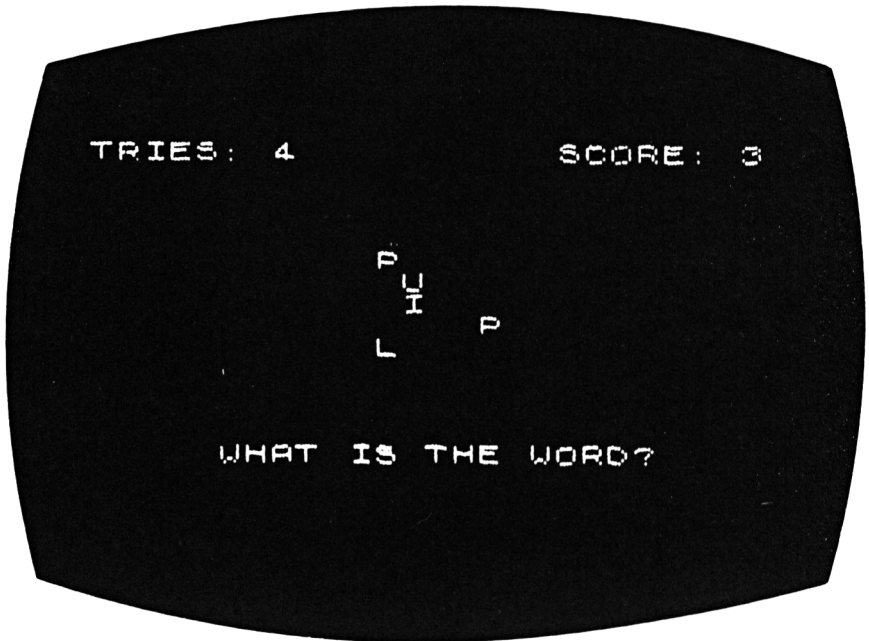
If you **think** that you are good at spelling then this game is for you.
If you **know** that you are bad at spelling then this game is certainly
for you. Well, you need the practice don't you? A selection of let-
ters will be scattered around in a box within the screen and the
player will be asked to unjumble them to make a word. Not any old
word like MAFILY will do however, when the *correct* word is
FAMILY.

How to play

This is for one player.

The selection of letters will not be on one line but will be mixed up
in a small square.

When you have decided what the correct word is you type it in and press ENTER.

Tries and correct answers will be shown on the screen but, in the event of a wrong answer the player will be asked to try again until the correct answer is given.

If you make a mistake press DEL and begin again, but always remember to use CAPITAL letters when typing in your entry.

Programming Hints

More difficult words can be used by changing the data statements in lines 10 to 30. If you increase the number of words, change the 20 in lines 30, 50 and 340 to match the total number of words.

Program

```
1 'Anagram
2 '(c) 1984 BY VINCE APPS
3 'AMSTRAD CPC 464 version by R.P.Jones
10   DATA POND,WOOD,MOUSE,TIGER,DIGIT,IDE
A,ANAGRAM,MOTH,PARTY,OCEAN,PENNY
20   DATA RABBIT,PEAR,TOAD,GUESS,BINARY,P
UPIL,BASIC,VIDEO,RECORD
30   DIM WORD$(20),MATRIX(6,6)
40   score=0:tries=0
50     FOR i=1 TO 20
60       READ WORD$(i)
70     NEXT i
80     GOSUB 530
90     GOSUB 590
100    GOSUB 330
110    GOSUB 430
120    LOCATE #1,3,13:PRINT #1,"What is th
e word (QUIT to give up) ?"
130    LOCATE #1,(40-LEN(WORD$(random)))/2
,15
140    GOSUB 240
150    GOSUB 500
160    IF answer$="QUIT" THEN GOTO 80
170    IF answer$<>WORD$(random) THEN 120
180    FOR i=1 TO 1000:NEXT i
```

```
190   GOSUB 530:GOSUB 590
200   LOCATE #1,12,5:PRINT #1,"ANOTHER GO
 (Y/N) ?";
210   z$=INKEY$:IF z$=""THEN 210
220   IF UPPER$(z$)="Y" THEN CLS#1:GOTO 1
00
230   STOP
240  'Keyin Routine
250   answer$=""
260   z$=INKEY$:IF z$=""THEN 260
270   IF z$=CHR$(127) AND answer$<>""THEN
 temp$=LEFT$(answer$,LEN(answer$)-1):ans
wer$=temp$:z1=POS(#1):z2=VPOS(#1):LOCATE
 #1,z1-1,z2:
PRINT SPACE$(1):LOCATE z1-1,z2:GOTO 260

280   IF z$=CHR$(13) THEN RETURN
290   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
300   IF z$=" "THEN 320
310   IF z$<"A" OR z$>"Z" THEN 260
320   PRINT #1,z$;:answer$=answer$+z$:GOT
O 260
330  'Select and Display Anagram
340   random=INT(RND*20)+1
350     FOR i=1 TO LEN(WORD$(random))
360       rand1=INT(RND*6)+1
370       rand2=INT(RND*6)+1
380       IF matrix(rand1,rand2)=1 THEN 36
O
390       MATRIX(rand1,rand2)=1
400       LOCATE #1,rand2*2+15,rand1+3:PRI
NT #1,MID$(WORD$(random),i,1)
410     NEXT i
420   RETURN
430  'Reset Matrix
440   FOR i=1 TO 6
450     FOR j=1 TO 6
460       MATRIX(i,j)=0
470     NEXT j
480   NEXT i
490   RETURN
500  'Check Answer
510   IF answer$=WORD$(random) THEN GOSUB
 640 ELSE IF answer$="QUIT" THEN GOSUB 8
20 ELSE GOSUB 690
```

```
520   RETURN
530   'Clear and Title Screen
540   MODE 1:INK 0,1:INK 1,6:BORDER 24
550   LOCATE 16,2:PRINT "Anagram"
560   LOCATE 16,3:PRINT STRING$(7,208)
570   WINDOW #1,1,40,8,24
580   RETURN
590   'Scoring Routine
600   LOCATE 5,5:PRINT "Tries : ";tries
610   LOCATE 25,5:PRINT "Score : ";score
620   LOCATE 1,7:PRINT STRING$(40,208)
630   RETURN
640   'Correct Answer
650   LOCATE #1,16,2:PRINT #1,"CORRECT";
660   score=score+1:tries=tries+1
670   GOSUB 780
680   RETURN
690   'Wrong Answer
700   LOCATE #1,17,2:PRINT #1,"WRONG";
710   tries=tries+1
720   GOSUB 800
730   FOR i=1 TO 2000:NEXT i
740   LOCATE #1,15,2:PRINT #1,"TRY AGAIN"
;
750   FOR i=1 TO 1500:NEXT i
760   LOCATE #1,15,2:PRINT #1,"          "
;
770   RETURN
780   FOR i=250 TO 1 STEP -5:SOUND 1,i,1,
7:NEXT i
790   RETURN
800   FOR i=500 TO 750 STEP 5:SOUND 1,i,1
,7:NEXT i
810   RETURN
820   CLS#1:z=LEN(word$(random)):LOCATE #
1,28-z,5:PRINT "The word is ";word$(rand
om):tries=tries+1
830   FOR i=1 TO 1500:NEXT i
840   RETURN
```

27

Compass
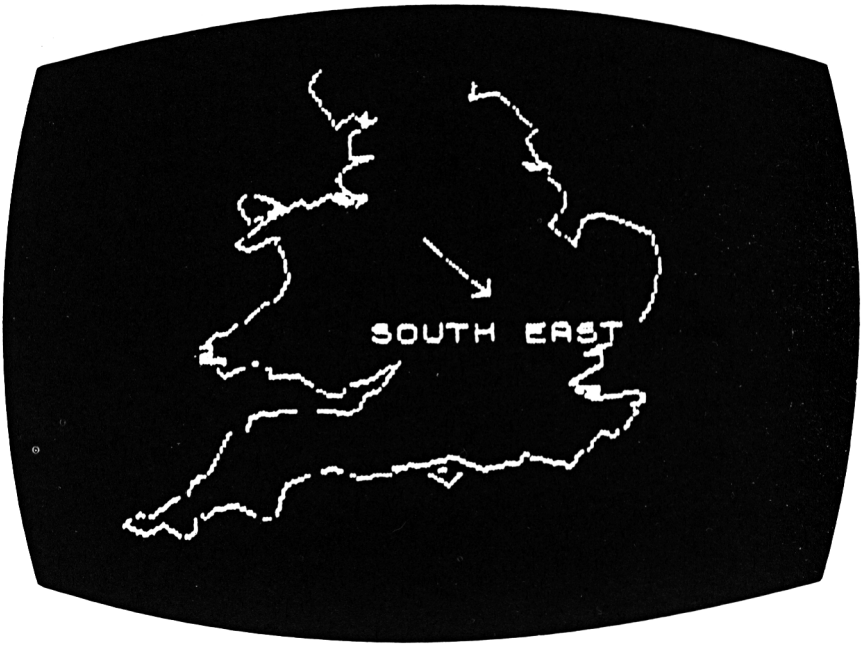
This game, along with Morse Code and Constellation games' could save your life one day. You might wander off in a desert, a jungle or an ice field and you will thank your lucky stars that you once had a computer.

The Compass game will help you to identify North from South and even North East from South West.

How to play

Your friendly computer will draw you a map and show you the eight major compass settings North, North East, East, South East, South, South West, West and North West.

The computer will then spin its own little compass setting, point the

arrow in a certain direction and ask you to decide where you are going.

Wrong answers mean that you will be asked again and again if necessary.

Random selection means that you may find yourself pointed in the same direction twice running but at least you should know where you are.

Programming Notes

This program uses the same map routine as 'towns' and 'counties'. If you are typing in one of these as well you can save yourself some work if you just type in the lines that are different with your first program still in the computer. Don't forget to save your first program on a tape.

Program

```
1 'Compass
2 '(c) 1984 BY VINCE APPS
3 'AMSTRAD CPC 464 version by R.P.Jones
10 'Map Data - England
20 DATA 44,46,50,45,60,44,70,40
30 DATA 80,44,90,52,100,56,110,50
40 DATA 120,56,130,72,140,68,150,64
50 DATA 160,66,170,73,180,78,190,74
60 DATA 200,72,210,71,220,73,230,75
70 DATA 240,76,250,80,260,94
80 DATA 264,104,260,108,240,112,246,116,
244,123
90 DATA 256,125,256,132,264,136,268,144,
268,160
100 DATA 267,167,264,173,260,176,248,176
,240,175,224,171
110 DATA 224,180,224,189,216,200,212,205
,208,207,212,206
120 DATA 220,212,216,216,216,220,216,228
,206,236,200,242
130 DATA 192,252,188,260,180,280,168,302
,160,314,148,320
```

```
140 DATA 140,315,135,314,124,324,120,323
,100,318,100,301
150 DATA 98,294,93,287,92,276,86,280,80,
282,78,280,80,274
160 DATA 81,264,83,260,84,252,92,250,94,
259,106,252,112,260
170 DATA 119,256,124,260,131,264,135,263
,126,252,124,244
180 DATA 132,236,136,228,134,223,145,225
,142,220,140,212
190 DATA 138,204,140,196,136,200,136,192
,128,198,120,196
200 DATA 100,190,90,180,90,170,100,168,1
08,166,108,160
210 DATA 104,152,100,148,86,140,71,133,7
6,120,80,114,81,112
220 DATA 98,120,108,112,120,110,140,115,
149,118,140,107
230 DATA 130,100,120,96,100,96,100,92,90
,88,84,86,84,80
240 DATA 80,74,77,72,68,64,68,60,60,55,4
4,46,0,0
250 DATA NORTH-EAST,NORTH,NORTH-WEST,WES
T,SOUTH-WEST,SOUTH,SOUTH-EAST,EAST
260 DEF FNcompassx(angle)=50*COS(angle)
270 DEF FNcompassy(angle)=50*SIN(angle)
280 'Main Routine
290   DIM bearing$(8)
300   score=0:tries=0
310   GOSUB 940:GOSUB 480:RESTORE
320   GOSUB 390
330   GOSUB 430
340   GOSUB 550
350   GOSUB 680
360   GOSUB 760
370   IF answer$=bearing$(rand1) THEN 310
380   GOTO 350
390 'Clear and title screen
400   LOCATE 33,2:PRINT "C O M P A S S"
410   LOCATE 33,3:PRINT STRING$(13,208)
420   RETURN
430 'Score Routine
440   WINDOW #1,60,78,5,8
450   LOCATE #1,1,1:PRINT #1,"Tries : ";t
ries;
```

```
460   LOCATE #1,1,3:PRINT #1,"Score : ";s
core;
470   RETURN
480  'Compass Bearings
490   WINDOW #2,60,78,10,20
500     FOR i=1 TO 8
510       READ bearing$(i)
520       PRINT #2,bearing$(i)
530     NEXT i
540   RETURN
550  'Select Bearing
560   DEG:ORIGIN 210,170:rand1=INT(RND*8)
+1:rand2=5+INT(RND*10)
570   INK 3,1:INK 4,13
580     FOR i=1 TO rand2
590       FOR j=0 TO 360 STEP 15
600         DRAWR 50*COS(j),50*SIN(j),3
610         DRAWR -(50*COS(j)),-(50*SIN(j)
),4
620       NEXT j
630     NEXT i
640   x=FNcompassx(rand1*45):y=FNcompassy
(rand1*45)
650   DRAW x,y,3
660   RETURN
670   RETURN
680  'Enter answer
690   LOCATE 21,22:PRINT "What is the bea
ring ?  ";
700   i=1:answer$=""
710   z$=INKEY$:IF z$=""THEN 710
720   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
730   IF z$=CHR$(13) THEN RETURN
740   IF (z$<"A" OR z$>"Z") AND z$<>"-" T
HEN 710
750   answer$=answer$+z$:PRINT z$;:GOTO 7
10
760  'Ckeck Answer
770   IF answer$=bearing$(rand1) THEN GOS
UB 790 ELSE GOSUB 850
780   RETURN
790  'Correct
800   LOCATE 32,24:PRINT "C O R R E C T !
"
810     FOR i=1 TO 1500
```

```
820    NEXT i
830    score=score+1:tries=tries+1
840    RETURN
850   'Wrong
860    LOCATE 32,24:PRINT "W R O N G !"
870     FOR i=1 TO 1500
880     NEXT i
890    tries=tries+1
900    LOCATE 32,24:PRINT "               "
910    LOCATE 20,22:PRINT "
                           "
920    GOSUB 430
930    RETURN
940   'Draw Map of England
950    MODE 2:INK 1,0:INK 0,13:BORDER 13
960    MOVE 74,76
970    READ x,y
980    IF x=0 AND y=0 THEN 1010
990    DRAW x+30,y+30,1
1000    GOTO 970
1010    RETURN
1020   MODE 2
1030   INK 3,1:INK 4,13
1040   ORIGIN 320,200
1050   DEG
1060   FOR i=0 TO 360 STEP 15
1070   DRAWR 50*COS(i),50*SIN(i),3
1080   DRAWR -(50*COS(i)),-(50*SIN(i)),4
1090   NEXT i
1100   GOTO 1060
```

28

Submarine
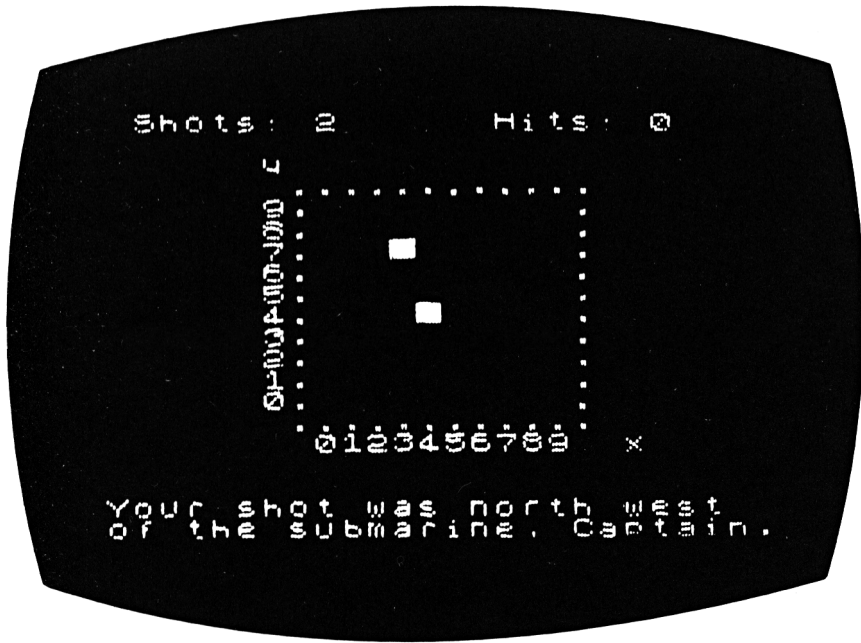
You are a destroyer captain alone in a hostile sea surrounded by a pack of submarines which are travelling secretly to a rendezvous. The submarines cannot break radio silence or send for help and must not attack you for fear of giving their position away but you can sink as many of them as you can - with as few depth charges as possible.

How to play

On the screen will be shown a board divided into 100 squares. The submarine is hiding in one of those squares. The bottom (horizontal) line is called X and the upright (perpendicular) line is called Y.

Each line of boxes goes from 0 to 9 and you have to give the box numbers to the computer when it asks for your entry. You will be

asked to type in a number for the X and Y lines. If you think that the submarine is in a box 8 across and 5 high then ENTER 8 and 5 when X and Y positions are asked for.

After the second number is entered you will hear the 'crump' of an exploding depth charge. If you make a direct hit first time you will hear a 'whooping' sound and the screen will show you how many tries you took to sink the submarine.

If however you miss, the computer will tell you if your shot was North, South, East or West of the target and you must then plan your next shot.

As soon as the submarine is sunk your computer will search and detect another target.

Special Note Expert captains should be able to detect and sink the enemy within four moves.

Program

```
1  'Submarine
2  'Copyright (c) VINCE APPS 1984
3  'AMSTRAD CPC 464 version by R.P.Jones
9    EVERY 200,0 GOSUB 800
10   GOSUB 300
   :'Initialise
20   GOSUB 330
   :'Header
30   GOSUB 390
   :'Score
40   GOSUB 430
   :'Grid
50   GOSUB 610
   :'Calculate square
60   GOSUB 640
   :'Guess
70   IF xs=xg AND ys=yg THEN GOTO 180
80   'Missed
90   IF yg=ys THEN dir1$="":GOTO 110
100   IF yg<ys THEN dir1$="N" ELSE dir1$
="S"
110  IF xg=xs THEN dir2$="":GOTO 130
```

```
120    IF xg<xs THEN dir2$="E":ELSE dir2$=
"W"
130    CLS#3:LOCATE #3,19,1:PRINT #3,"M I
 S S E D !   E N E M Y   I S   T O   ";d
ir1$;" ";dir2$;
140      FOR i=1 TO 750
150      NEXT i
160    shots=shots+1:GOSUB 390
170    GOTO 60
180 'A hit
190    INK 3,7,24:BORDER 7,24
200    SPEED INK 1,1
210 FOR j=1 TO 200:SOUND 7,j,1,7:NEXT j
220      FOR i=1 TO 100
230      MOVE 250+xg*20,90+yg*20:TAG:PRIN
T CHR$(143);CHR$(128);:TAGOFF
240      NEXT i
250    MOVE 250+xg*20,90+yg*20:TAG:PRINT C
HR$(143);:TAGOFF
260    shots=shots+1:hits=hits+1:BORDER 9
270    GOSUB 390
280    IF hits>9 THEN CLS#2:LOCATE #2,36,5
:PRINT #2,"A L L   O F   E N E M Y   D E
 S T R O Y E D";:STOP
290    GOTO 50
300 'Initialisation routine
310    shots=0:hits=0
320    RETURN
330 'Clear & Title Screen
340    MODE 2:INK 1,2:INK 0,6:BORDER 9
350    WINDOW #1,1,80,1,5:WINDOW #3,1,80,2
4,25:WINDOW #2,1,80,6,23
360    LOCATE #1,31,2:PRINT #1,"S U B M A
R I N E"
370    LOCATE #1,31,3:PRINT #1,STRING$(17,
208)
380    RETURN
390 'Score Routine
400    LOCATE #1,5,5:PRINT #1,"Shots   :  "
;shots
410    LOCATE #1,60,5:PRINT #1,"Hits   :  "
;hits
420    RETURN
430 'Grid Set-up
440    ORIGIN 220,80
450      FOR i=0 TO 10
```

```
460      MOVER 20,0:DRAWR 0,200:DRAWR 0,-
200
470      NEXT i
480    ORIGIN 240,60
490      FOR i=0 TO 10
500        MOVER 0,20:DRAWR 200,0:DRAWR -20
0,0
510      NEXT i
520    ORIGIN 0,0:x=240:y=60
530      FOR i=0 TO 9
540        MOVE x+i*20,y:TAG:PRINT i;:TAGOF
F
550      NEXT i
560    x=200:y=95
570      FOR i=0 TO 9
580        MOVE x,y+i*20:TAG:PRINT i;:TAGOF
F
590      NEXT i
600    RETURN
610    'Calculate Square
620    xs=INT(10*RND):ys=INT(10*RND):px=25
0+xs*20:py=90+ys*20
630    RETURN
640    'Enter Guess and display
650    LOCATE #3,1,1:PRINT #3,SPC(70)
660    LOCATE #3,21,1:PRINT #3,"Enter X an
d Y separated by a comma   ";
670    z$=INKEY$:IF z$=""THEN 670
680    IF z$<"0"OR z$>"9" THEN 670
690    xg=VAL(z$)
700    PRINT #3,xg;
710    z$=INKEY$:IF z$=""THEN 710
720    IF z$<>",","THEN 710
730    PRINT #3,",";
740    z$=INKEY$:IF z$=""THEN 740
750    IF z$<"0"OR z$>"9" THEN 740
760    yg=VAL(z$)
770    PRINT #3,yg;
780    guessx=250+xg*20:guessy=90+yg*20
790    RETURN
800    'Sonar
810    ENT 1,25,5,2,25,-5,2
820    SOUND 1,360,40,7,,1:SOUND 1,0,0,10
830    RETURN
840 FOR i=1 TO 200:SOUND 7,i,1,7:NEXT i
```

29

Word Search
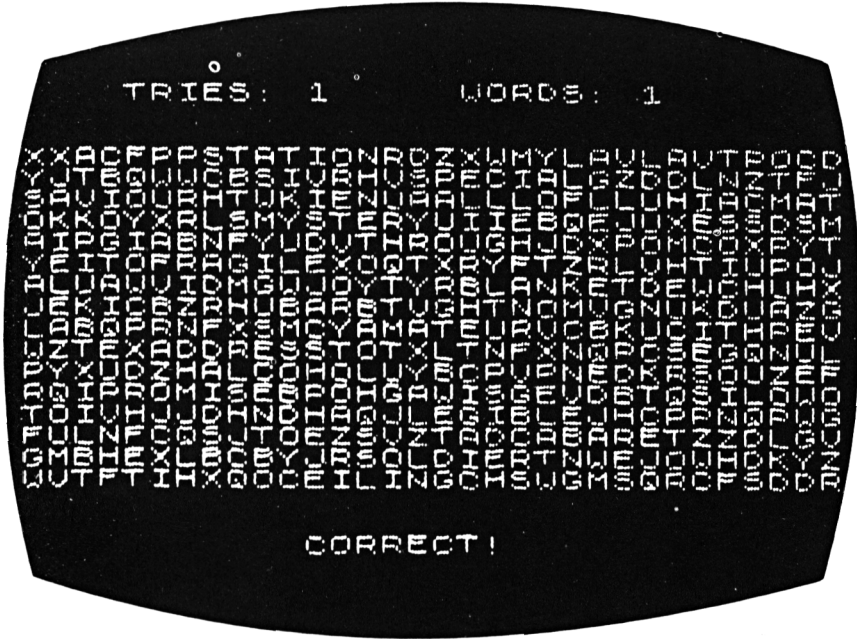
This is a game to see how sharp your eyesight is and how quick you are at spelling words which are hidden in the screen.

The computer will put up a selection of letters all over the screen and, hidden amongst this alphabet spaghetti will be certain words which you will have to spot and spell out to your computer.

How to play

When you find a word on the screen you type it in. You then press the ENTER key and, if you have correctly identified and spelled out the word, it will be picked out, in lower case, on your screen.

The score board will show your number of tries and the number of words you have correctly spotted.

When you cannot find any more words you simply type in the word
END.

Your computer will then blank out the words you have found and
show, in lower case, all the words you have missed.

Your score will be shown on the screen.

Programming Hints

If the selection of words is too simple or difficult you can change
the data in lines 10 to 40. Make sure that all the words you use have
exactly 7 letters.

Program

```
1 'Word Search
2 'Copyright (c) VINCE APPS 1984
3 'AMSTRAD CPC 464 version by R.F.Jones
10    'Data Statements
20      DATA PROMISE,SPECIAL,BLANKET,FRAGI
LE,THROUGH,ADDRESS,CEILING,AMATEUR
30      DATA MYSTERY,LEGIBLE,BELIEVE,STATI
ON,RHUBARB,DISSECT,SAVIOUR,ALCOHOL
40      DATA CUSHION,SOLDIER,CABARET,AQUAT
IC
50    'INITIALISATION ROUTINE
60      tries=0:correct=0
70      GOSUB 800:LOCATE #2,26,5:PRINT #2,
"P L E A S E   W A I T . . ."
80      DIM word$(20,5),array$(15)
90        FOR i=1 TO 20
100         READ word$(i,1):word$(i,2)="0"
110       NEXT i
120       FOR i=1 TO 15
130         FOR j=1 TO 80
140           array$(i)=array$(i)+"#"
150         NEXT j
160       NEXT i
170     CLS #2
180     LOCATE #2,19,5:PRINT #2,"C R E A T
 I N G   S E A R C H   A R R A Y"
190       FOR i=1 TO 20
```

```
200         randword=INT(RND*20)+1
210         IF word$(randword,2)<>"0" THEN
  200
220         word$(randword,2)="1"
230         temp$=word$(randword,1)
240         length=LEN(temp$)
250         randrow=INT(RND*15)+1
260         randstart=INT(RND*(80-length))
+1
270         check=0
280            FOR j=randstart TO randstart
+length-1
290               IF MID$(array$(randrow),j,1
)<>"#"THEN check=-1
300            NEXT j
310         IF check THEN 250
320         MID$(array$(randrow),randstart
,length)=temp$:word$(randword,3)=STR$(ra
ndstart):word$(randword,4)=STR$(length):
word$(randwo
rd,5)=STR$(randrow)
330      NEXT i
340      FOR i=1 TO 15
350         FOR j=1 TO 80
360            IF MID$(array$(i),j,1)<>"#" T
HEN 380
370               temp=INT(RND*26)+1:z$=CHR$(64
+temp):MID$(array$(i),j,1)=z$
380         NEXT j
390      NEXT i
400     CLS #2
410      FOR i=1 TO 15
420         PRINT #2,array$(i);
430      NEXT i
440     GOSUB 860
450     GOSUB 480
460     GOSUB 560
470     IF control=0 OR answer$="" THEN GO
TO 620 ELSE GOTO 680
480    'Enter Answer
490     LOCATE #3,18,2:PRINT #3,"E N T E R
   W O R D  ";
500     answer$=""
510     z$=INKEY$:IF z$="" THEN 510
520     IF z$=CHR$(13) THEN RETURN
530     IF z$>="a" AND z$<="z" THEN z$=UPP
ER$(z$)
```

```
540    IF z$<"A" OR z$>"Z" THEN 510
550    answer$=answer$+z$:PRINT #3,z$;:GO
TO 510
560  'Check Answer
570    i=1
580    control=INSTR(1,array$(i),answer$)
590    IF control<>0 THEN 610
600    i=i+1:IF i<16 THEN 580
610    RETURN
620  'Wrong
630    CLS #3:LOCATE #3,2,24:PRINT #3,"W R
  O N G !    T R Y    A G A I N"
640      FOR i=1 TO 1500
650      NEXT i
660    tries=tries+1
670    GOSUB 860:CLS #3:GOTO 450
680  'Correct
690    MID$(array$(i),control,LEN(answer$)
)=LOWER$(MID$(array$(i),control,LEN(answ
er$)))
700    CLS #2:CLS #3
710      FOR i=1 TO 15
720        PRINT #2,array$(i);
730      NEXT i
740    tries=tries+1:correct=correct+1
750    IF correct=20 THEN 900
760    LOCATE #3,36,2 :PRINT#3,"C O R R E
C T  ! ! !"
770      FOR i=1 TO 1500
780      NEXT i
790    GOSUB 860:CLS #3:GOTO 450
800  'Clear & Title Screen
810    MODE 2:INK 1,0:INK 0,13:BORDER 3
820    WINDOW #1,1,80,1,5:WINDOW #2,1,80,6
,20:WINDOW #3,1,80,21,25
830    LOCATE #1,29,2:PRINT #1,"W O R D
S E A R C H"
840    LOCATE #1,29,3:PRINT #1,STRING$(21,
208)
850    RETURN
860  'Score Routine
870    LOCATE #1,10,4:PRINT #1,"T R I E S
  :  ";tries
880    LOCATE #1,60,4:PRINT #1,"W O R D S
  :  ";correct
890    RETURN
900    GOSUB 860:CLS#2:LOCATE #2,5,30:PRIN
T #2,"G A M E    O V E R":STOP
```

30

Noughts and Crosses
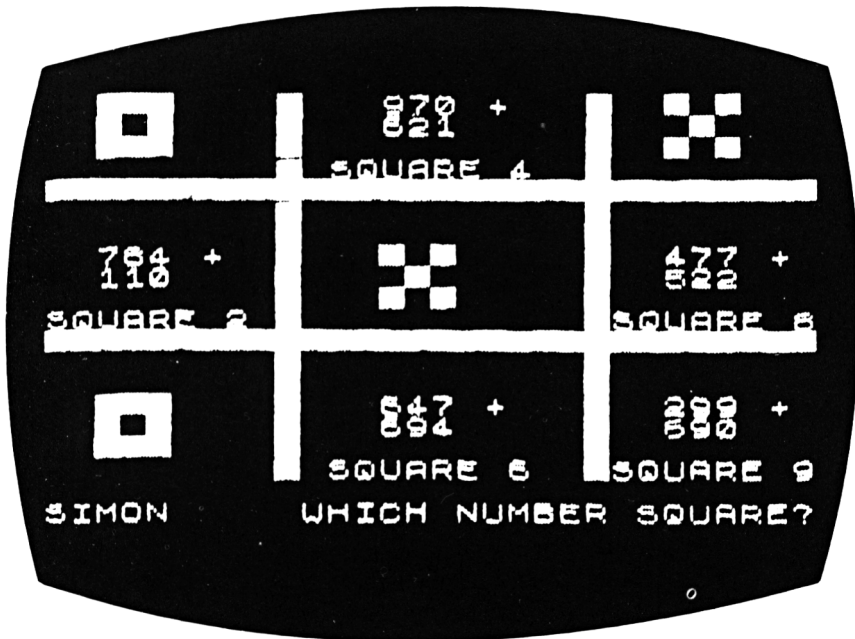
No, it's not that same old boring game that you play when it's raining outside and there is nothing else to do.

With our noughts and crosses you have to solve a problem **before** you can make your mark on your computer's board. You will have to decide if you can answer the question before you choose your box.

How to play

The computer will ask for the players names which you type in and enter by pressing the ENTER key.

The computer will then present you with a board and in each of the nine squares you will find a maths sum to solve.
First choose the box you want and ENTER the number.

Now you can type in your answer and see if you get your nought or cross for the correct answer.

Your opponent must follow the same steps.

If either player gives a wrong answer the computer moves to the opposing player's turn.

The game progresses until someone gets a winning line at which point you can press caps shift and space together, then RUN to play again.

If no one can complete a winning line then the game can proceed until all the boxes are completed and the player with the highest number of noughts or crosses will be the winner.

Programming Note

You can make the sums easier by reducing the numbers in line 100 or more difficult by typing in a larger number.

Program

```
 10 REM Noughts and Crosses
 20 MODE 1
 30 DIM GRID(9),NUM(18)
 40 REM LOOP
 50 CLS:GOSUB 390
 60 FOR I=1 TO 9
 70 GRID(I)=0
 80 NEXT I
 90 FOR I=1 TO 18
100 NUM(I)=INT(RND(1)*900)+100
110 NEXT I
120 ED=0:GO=1-INT(RND(1)*2+1)
130 LOCATE 1,7:PRINT"What is player 1's
name ?";
140 GOSUB 1080
150 PLAYER1$=TEMP1$
160 LOCATE 1,8:PRINT"You are noughts"
170 LOCATE 1,10:PRINT"What is player 2's
name ?";
```

```
180 GOSUB 1080
190 PLAYER2$=TEMP1$
200 LOCATE 1,11:PRINT"You are crosses"
220 IF GO=-1 THEN PRINT PLAYER1$; ELSE P
RINT PLAYER2$;
230 PRINT" will go first, press a key";
240 IF INKEY$="" THEN GOTO 240
250 CLS:GOSUB 390
260 GOSUB 430
270 GOES=0
280 GOES=GOES+1
290 IF GO=-1 THEN GOSUB 560:IF ED=0 THEN
 GO=0
300 IF GO=0 AND ED=0 AND GOES<>9 THEN GO
SUB 600:IF ED=0 THEN GO=-1
310 IF GOES<>9 AND ED=0 THEN GOTO 280
320 IF GOES=9 THEN GOSUB 1330 ELSE GOSUB
 1410
330 FOR I=1 TO 6000:NEXT I
340 CLS:GOSUB 390
350 LOCATE 1,10:PRINT"Another go (Y/N) ?
";
360 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 3
60
370 IF TEMP$<>"N" AND TEMP$<>"n" THEN GO
TO 40
380 END
390 REM
400 LOCATE 1,2:PRINT"Noughts and Crosses
"
420 RETURN
430 REM
440 FOR I=4 TO 17
450 LOCATE 12,I+1:PRINT" + ":LOCATE 25,I
+1:PRINT" + "
460 NEXT I
470 LOCATE 2,9:PRINT" ";STRING$(34,"+")
480 LOCATE 2,14:PRINT" ";STRING$(34,"+")
490 SQUARE=0
500 FOR J=1 TO 3:FOR I=1 TO 3
510 SQUARE=SQUARE+1
520 LOCATE I*12-5+(I=3),J*5:PRINT" ";SQU
ARE;" "
530 LOCATE I*13-12+(I=3),J*5+2:PRINT " "
;NUM(SQUARE);"+";NUM(SQUARE+9);
```

```
540 NEXT I:NEXT J
550 RETURN
560 REM
570 LOCATE 1,19:PRINT" ";PLAYER1$;"'s tu
rn";CHR$(18)
580 SIGN=1:GOSUB 640
590 RETURN
600 REM
610 LOCATE 1,19:PRINT" ";PLAYER2$;"'s tu
rn";CHR$(18)
620 sign=-1:GOSUB 640
630 RETURN
640 REM
650 LOCATE 1,21:PRINT" Which square ?";
660 REM
670 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 6
70
680 VL=VAL(TEMP$)
690 IF VL<1 THEN GOTO 660
700 IF GRID(VL)<>0 THEN GOSUB 900:GOTO 6
60
710 REM LOOP
720 LOCATE 1,21:PRINT" What then, is ";N
UM(VL);" + ";NUM(VL+9);"   ";
730 INPUT TEMP$
740 IF TEMP$="" THEN GOTO 710
750 VL1=VAL(TEMP$)
760 IF VL1=NUM(VL)+NUM(VL+9) THEN GOTO 8
20
770 LOCATE 1,23:PRINT " Wrong !,you lose
 your go !!":LOCATE 1,21
780 FOR I=50 TO 10 STEP -10
790 SOUND 1,I,5:NEXT I
800 FOR I=1 TO 4000:NEXT I:PRINT CHR$(18
);CHR$(18);CHR$(18)
810 RETURN
820 LOCATE 1,21:PRINT"O.K.";CHR$(18)
830 FOR I=150 TO 200 STEP 10
840 SOUND 1,I,5:NEXT I
850 GRID(VL)=SIGN
860 SUM=3*SIGN:GOSUB 980
870 NORC=SIGN:BOX=VL:GOSUB 1170
880 FOR I=1 TO 3000:NEXT I
890 RETURN
900 REM
910 LOCATE 1,23:PRINT" That square has a
lready gone";
```

```
920 SOUND 1,40,15
930 FOR I=1 TO 1000:NEXT I
940 SOUND 1,20,25
950 FOR I=1 TO 2000:NEXT I
960 LOCATE 1,23:PRINT CHR$(18)
970 RETURN
980 REM
990 I=0:J=0
1000 FOR K=1 TO 3
1010 IF GRID(I+1)+GRID(I+2)+GRID(I+3)=SU
M THEN ED=-1
1020 I=I+3
1030 IF GRID(J+1)+GRID(J+4)+GRID(J+7)=SU
M THEN ED=-1
1040 J=J+1
1050 NEXT K
1060 IF GRID(1)+GRID(5)+GRID(9)=SUM OR G
RID(3)+GRID(5)+GRID(7)=SUM THEN ED=-1
1070 RETURN
1080 REM
1090 TEMP$="":TEMP1$=""
1100 REM LOOP
1110 TEMP$=INKEY$:IF TEMP$="" THEN GOTO
1110
1120 TEMP$=UPPER$(TEMP$)
1130 IF TEMP$>=" " AND TEMP$<="Z" AND LE
N(TEMP1$)<12 THEN TEMP1$=TEMP1$+TEMP$:PR
INT TEMP$;
1140 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>
0 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1
):PRINT CHR$(8);" ";CHR$(8);
1150 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
 THEN GOTO 1100
1160 RETURN
1170 REM
1180 XPS=((BOX-1) MOD 3)+1:YPS=((BOX-1)
\ 3)+1
1190 XPS=XPS*13-10+(XPS=3)
1200 YPS=YPS*5
1210 IF NORC=-1 THEN GOTO 1280
1230 LOCATE XPS,YPS:PRINT" ******* "
1240 LOCATE XPS,YPS+1:PRINT" *     * "
1250 LOCATE XPS,YPS+2:PRINT" *     * "
1260 LOCATE XPS,YPS+3:PRINT" ******* "
1270 RETURN
1280 LOCATE XPS,YPS:PRINT" **   ** "
```

```
1290 LOCATE XPS,YPS+1:PRINT"   ***   "
1300 LOCATE XPS,YPS+2:PRINT"   ***   "
1310 LOCATE XPS,YPS+3:PRINT" **   ** "
1320 RETURN
1330 REM
1340 LOCATE 1,19:PRINT CHR$(18);CHR$(18)
;CHR$(18)
1350 LOCATE 1,19:PRINT" Its a Draw"
1370 FOR i=100 TO 150 STEP 8
1380 SOUND 1,I,INT(RND(1)*50+5)
1390 NEXT I
1400 RETURN
1410 REM
1420 LOCATE 1,19:PRINT CHR$(18);CHR$(18)
;CHR$(18)
1430 TEMP$=PLAYER2$:IF GO=-1 THEN TEMP$=
PLAYER1$
1440 LOCATE 1,19:PRINT TEMP$;" wins"
1460 FOR I=100 TO 220 STEP 8
1470 SOUND 1,I,INT(RND(1)*50+5)
1480 NEXT I
1490 RETURN
```

31

Towns

Would you believe that there are people living in this country who don't know where they are - on a map? Now we are sure that clever young readers of this book will have a good idea of where they live but will they know where other people live?

To find out we have devised this game to help you find out where the major cities in England and Wales are to be found. Scotland and Northern Ireland are on a separate program.

How to play

The computer will draw an outline map for you and give you a list of ten towns to choose from.

The computer will then choose, at random, a town for you to identify. A bright dot will indicate the town in question.

Tries and scores are shown on the screen.

If you are wrong it will be a case of trying until you get it right. After all, it pays to know where you are - doesn't it?

Programming Notes

This program uses the same map drawing routine as 'counties' and 'compass'. If you are typing in all of them you will save yourself some work if you just type in the lines that are different with your first program still in the computer. Don't forget to save your first program onto a tape.

Program

```
1 'Towns
2 '(c) 1984 BY VINCE APPS
3 'AMSTRAD CPC 464 version by R.P.Jones
10 'Map Data - England
20 DATA 44,46,50,45,60,44,70,40
30 DATA 80,44,90,52,100,56,110,50
40 DATA 120,56,130,72,140,68,150,64
50 DATA 160,66,170,73,180,78,190,74
60 DATA 200,72,210,71,220,73,230,75
70 DATA 240,76,250,80,260,94
80 DATA 264,104,260,108,240,112,246,116,
244,123
90 DATA 256,125,256,132,264,136,268,144,
268,160
100 DATA 267,167,264,173,260,176,248,176
,240,175,224,171
110 DATA 224,180,224,189,216,200,212,205
,208,207,212,206
120 DATA 220,212,216,216,216,220,216,228
,206,236,200,242
130 DATA 192,252,188,260,180,280,168,302
,160,314,148,320
140 DATA 140,315,135,314,124,324,120,323
,100,318,100,301
150 DATA 98,294,93,287,92,276,86,280,80,
282,78,280,80,274
160 DATA 81,264,83,260,84,252,92,250,94,
259,106,252,112,260
```

```
170 DATA 119,256,124,260,131,264,135,263
,126,252,124,244
180 DATA 132,236,136,228,134,223,145,225
,142,220,140,212
190 DATA 138,204,140,196,136,200,136,192
,128,198,120,196
200 DATA 100,190,90,180,90,170,100,168,1
08,166,108,160
210 DATA 104,152,100,148,86,140,71,133,7
6,120,80,114,81,112
220 DATA 98,120,108,112,120,110,140,115,
149,118,140,107
230 DATA 130,100,120,96,100,96,100,92,90
,88,84,86,84,80
240 DATA 80,74,77,72,68,64,68,60,60,55,4
4,46,0,0
250 DATA BRIGHTON,230,76,BRISTOL,152,108
,CARDIFF,128,112,COVENTRY,168,150
260 DATA HULL,208,208,LEEDS,168,208,LIVE
RPOOL,148,204,LONDON,230,110
270 DATA NEWCASTLE,188,260,PLYMOUTH,100,
56
280 'Main Routine
290   DIM mappos(10,2),towns$(10)
300   score=0:tries=0
310   GOSUB 870:GOSUB 480:RESTORE
320   GOSUB 390
330   GOSUB 430
340   GOSUB 550
350   GOSUB 610
360   GOSUB 690
370   IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN 310
380   GOTO 350
390 'Clear and title screen
400   LOCATE 31,2:PRINT "T O W N S"
410   LOCATE 32,3:PRINT STRING$(15,208)
420   RETURN
430 'Score Routine
440   WINDOW #1,60,78,5,8
450   LOCATE #1,1,1:PRINT #1,"Tries : ";t
ries;
460   LOCATE #1,1,3:PRINT #1,"Score : ";s
core;
470   RETURN
480 'Town Names and Locations
490   WINDOW #2,60,78,10,20
```

```
500    FOR i=1 TO 10
510      READ towns$(i),mappos(i,1),mappo
s(i,2)
520      PRINT #2,towns$(i)
530    NEXT i
540   RETURN
550 'Select and indicate town
560   random=INT(RND*10)+1
570   target$=towns$(random)
580   MOVE mappos(random,1)+30,mappos(ran
dom,2)+30
590   TAG:PRINT CHR$(143);:TAGOFF
600   RETURN
610 'Enter answer
620   LOCATE 21,22:PRINT "Which Town is i
t ?  ";
630   i=1:answer$=""
640   z$=INKEY$:IF z$=""THEN 640
650   IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
660   IF z$=CHR$(13) THEN RETURN
670   IF z$<"A" OR z$>"Z" THEN 640
680   answer$=answer$+z$:PRINT z$;:GOTO 6
40
690 'Ckeck Answer
700   IF LEFT$(answer$,3)=LEFT$(target$,3
) THEN GOSUB 720 ELSE GOSUB 780
710   RETURN
720 'Correct
730   LOCATE 32,24:PRINT "C O R R E C T !
"
740      FOR i=1 TO 1500
750      NEXT i
760   score=score+1:tries=tries+1
770   RETURN
780 'Wrong
790   LOCATE 32,24:PRINT "W R O N G !"
800    FOR i=1 TO 1500
810    NEXT i
820   tries=tries+1
830   LOCATE 32,24:PRINT "              "
840   LOCATE 20,22:PRINT "
            "
850   GOSUB 430
860   RETURN
870 'Draw Map of England
```

```
880    MODE 2:INK 1,0:INK 0,13:BORDER 13:C
LS
890    MOVE 74,76
900    READ x,y
910    IF x=0 AND y=0 THEN 940
920    DRAW x+30,y+30
930    GOTO 900
940    RETURN


40 'Map Data - Scotland
50 DATA -15,-5,-20,11,0,11,-20,16,-5,21,
-10,11,-10,-16
60 DATA -25,-32,-10,-16,-15,-5,-15,16,-2
0,11,-5,16,-20,5,5,27,-5,32
70 DATA 25,11,50,16,-25,21,0,11,20,0,20,
21,35,53,15,-5,15,16,0,21,15,-11,30,5
80 DATA 15,16,5,-11,5,0,5,5,20,-16,25,11
,0,-43,15,0,-10,-16,30,-48
90 DATA 5,16,5,0,5,-32,-35,-43,45,32,15,
-27,0,-16,10,-11,0,-32,-5,16,-10,16
100 DATA -5,11,-10,11,-5,-11,10,-32,-15,
-16,25,5,5,-16,-15,-21
110 DATA -10,5,-10,-11,-5,16,-10,16,-20,
-32,-25,-21,-40,27,-20,-11
120 DATA 750,75,-75,-11,0,-11,-25,-11,-1
0,-16,-15,0,-10,11,-15,-11,-20,37
130 DATA 0,-59,-10,-5,-15,11,-10,21,-25,
16,-15,21,-20,-16,5,-32,-5,-5,-25,69
140 DATA 15,16,5,-21,5,0,0,21,15,27,15,5
3,15,11,0,16,-20,27,5,53,15,16
150 DATA 30,-11,0,5,-25,53,-15,-43,-10,1
1,5,32,-10,0,-5,32,-10,-16,-10,37,40,37
160 DATA -25,0,-30,-27,0,-53,-30,-101,-1
5,0,-5,11,10,11,0,27,20,27,-5,69
170 DATA 20,27,-15,21,65,133,-5,0,-65,-8
0,-45,27,0,5,20,16
180 DATA 150,373,30,-16,5,-21,30,21,10,0
,-10,-16,50,21,20,-5,50,-5,20,27
190 DATA 30,-21,-15,-32,0,-27,-100,-80,0
,-16,-10,0,0,-11,25,5,0,-11,-25,-21
200 DATA -65,-69,5,0,40,37,5,-5,85,37,5,
-11,30,-11,20,11,50,-11,25,5,30,-11
210 DATA 5,-5,0,-21,-10,-27,-45,-123,-25
,-27,5,-11,-25,-32,-10,-5,-20,11
220 DATA -40,-21,-10,-16,0,-5,50,21,-10,
-21,10,-5,15,-16,-10,-16,-40,0,-15,-21
```

```
230 DATA -10,-5,-70,21,-10,5,0,-5,55,-37
,25,5,20,-16,10,0,20,21,5,0,25,-21
240 DATA 30,0,5,-5,25,-5,15,-21,0,-21,10
,-16,-30,-43,-10,-53,-100,-75
250 DATA 0,0
260 DATA ABERDEEN,26,13,AYR,17,26,BELFAS
T,8,27,DUNDEE,23,17
270 DATA EDINBURGH,22,22,GLASGOW,19,23,I
NVERNESS,21,11
280 DATA LARNE,9,26,STIRLING,18,20,THURS
O,22,4
290 'Main Routine
300   DIM mappos(10,2),counties$(10)
310   score=0:tries=0
320   GOSUB 900:GOSUB 490:RESTORE
330   GOSUB 400
340   GOSUB 440
350   GOSUB 570
360   GOSUB 630
370   GOSUB 720
380   IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN 320
390   GOTO 360
400 'Clear and title screen
410 LOCATE 32,2:PRINT"T O W N S"
420 LOCATE 32,3:PRINT STRING$(9,208)
430   RETURN
440 'Score Routine
450   WINDOW #1,60,78,5,8
460   LOCATE #1,1,1:PRINT #1,"Tries : ";t
ries;
470   LOCATE #1,1,3:PRINT #1,"Score : ";s
core;
480   RETURN
490 'Town Names and Locations
500   WINDOW #2,60,78,10,20
510     FOR i=1 TO 10
520       READ counties$(i),mappos(i,1),ma
ppos(i,2)
530       mappos(i,1)=12*mappos(i,1):mappo
s(i,2)=7*(40-mappos(i,2))
540       PRINT #2,counties$(i)
550     NEXT i
560   RETURN
570 'Select and indicate town
580   random=INT(RND*10)+1
590   target$=counties$(random)
600   MOVE mappos(random,1)+30,mappos(ran
dom,2)+30
```

```
610    TAG:PRINT CHR$(143);:TAGOFF
620    RETURN
630   'Enter answer
640    LOCATE 20,25:PRINT "Which Town is i
t ?   ";CHR$(18):LOCATE 39,25
650    i=1:answer$=""
660    z$=INKEY$:IF z$=""THEN 660
670    IF z$>="a" AND z$<="z" THEN z$=UPPE
R$(z$)
680    IF z$=CHR$(13) THEN RETURN
690  IF Z$=CHR$(127) AND LEN(answer$)>0 T
HEN answer$=LEFT$(answer$,LEN(answer$)-1
):PRINT CHR$(8);" ";CHR$(8);
700    IF z$<"A" OR z$>"Z" THEN 660
710    answer$=answer$+z$:PRINT z$;:GOTO 6
60
720  'Ckeck Answer
730    IF LEFT$(answer$,2)=LEFT$(target$,2
) THEN GOSUB 750 ELSE GOSUB 810
740    RETURN
750   'Correct
760    LOCATE 32,24:PRINT "C O R R E C T !
"
770      FOR i=1 TO 1500
780      NEXT i
790    score=score+1:tries=tries+1
800    RETURN
810  'Wrong
820    LOCATE 32,24:PRINT "W R O N G !"
830      FOR i=1 TO 1500
840      NEXT i
850    tries=tries+1
860    LOCATE 32,24:PRINT "              "
870    LOCATE 20,22:PRINT "
                      "
880    GOSUB 440
890    RETURN
900  'Draw Map of Scotland
910    MODE 2:INK 1,0:INK 0,13:BORDER 13:C
LS
920  MOVE 100,100
930    READ x,y
940    IF x=0 AND y=0 THEN 980
950  IF x>150 THEN PLOT x/2,y/3:GOTO 970
960  DRAWR x/2,y/3
970    GOTO 930
980    RETURN
```

32

Vowel Chase
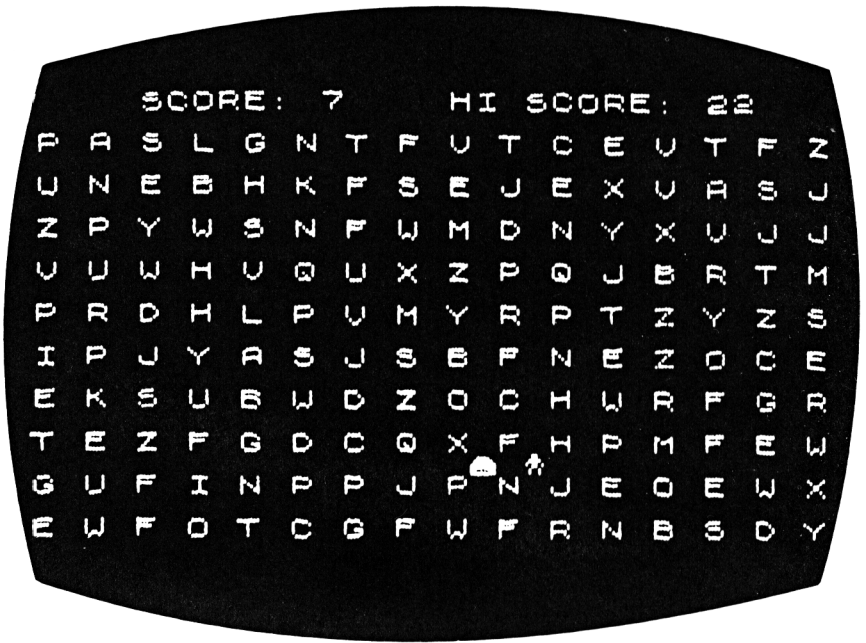
You may have heard of voles and owls but we'll wager you haven't been on a vowel chase before.

You'll find yourself in the form of a little man running around an alphabetic maze collecting points for each vowel (A, E, I, O, U) which you munch.

But beware, there is a maze keeper out to munch you.

How to play

Your tiny figure can be moved up and down the arrow keys. Every time you munch a vowel you get one point and the space is filled in by your computer with a consonant, or even another vowel.

If you get all the vowels from the screen before you are caught you get 10 bonus points.

However, you also lose one point for every consonant you eat so try and stick to the maze corridors or you could wind up with a minus score.

As soon as the game is completed, or you have been munched up by the mazekeeper, your computer will ask you if you want to play again in which case you press Y or N for yes or no and press The only advantage you have over the maze keeper is that you can run through the letters, which will cost you minus points, but the maze keeper must keep to the aisles.

If the maze keeper gets you and the game ends the screen will light up all the vowels you have missed.

Program

```
 10 REM VOWEL CHASE
 20 GOSUB 920
 30 MODE 0
 40 BORDER 13
 50 SYMBOL 254,24,24,60,90,24,36,36,102
 60 SYMBOL 255,0,60,126,219,255,195,255,1
 70
 70 HIGH=0
 80 SCORE=0:AGAIN=0:FLAG=0
 90 CLS:GOSUB 810
100 GOSUB 760
110 PROW=9:OPROW=9:PCOL=17:OPCOL=17
120 GROW=17:OGROW=17:GCL=4:OGCL=4
130 FOR J=9 TO 23 STEP 2
140 FOR K=1 TO 19 STEP 2
150 LOCATE K,J:PRINT CHR$(65+INT(RND(1)*
26))
160 NEXT K:NEXT J
170 PEN 1:LOCATE PCOL,PROW:PRINT CHR$(25
4)
180 REM LOOP
190 GOSUB 250
200 GOSUB 420
210 GOSUB 250
220 IF FLAG<>-1 THEN GOTO 180
```

```
230 IF AGAIN=0 THEN GOTO 80
240 CLS:END
250 REM
260 IF INKEY(0)=0 AND PROW>8 THEN PROW=P
ROW-1
270 IF INKEY(2)=0 AND PROW<24 THEN PROW=
PROW+1
280 IF INKEY(1)=0 AND PCOL<20 THEN PCOL=
PCOL+1
290 IF INKEY(8)=0 AND PCOL>1 THEN PCOL=P
COL-1
300 IF PCOL=OPCOL AND PROW=OPROW THEN RE
TURN
310 XX=PCOL:YY=PROW:GOSUB 870
320 G$=CHR$(DD):IF G$=" " THEN GOTO 350
330 IF G$="A" OR G$="E" OR G$="I" OR G$=
"O" OR G$="U" THEN SCORE=SCORE+1:SOUND 1
,200,5:GOTO 350
340 SCORE=SCORE-1:SOUND 1,40,1
350 PEN 1:LOCATE PCOL,PROW:PRINT CHR$(25
4);
360 PEN 3
370 IF OPROW\2<>OPROW/2 AND OPCOL\2<>OPC
OL/2 THEN LOCATE OPCOL,OPROW:PRINT CHR$(
65+INT(RND(1)*26)):GOTO 390
380 LOCATE OPCOL,OPROW:PRINT" "
390 OPCOL=PCOL:OPROW=PROW
400 GOSUB 760
410 RETURN
420 REM
430 IF GROW>PROW THEN GROW=GROW-1:GOTO 4
70
440 IF GROW<PROW THEN GROW=GROW+1:GOTO 4
70
450 IF GCL>PCOL THEN GCL=GCL-1:GOTO 470
460 IF GCL<POCL THEN GCL=GCL+1:GOTO 470
470 XX=GCL:YY=GROW:GOSUB 870:G$=CHR$(DD)
480 IF G$=CHR$(254) THEN GOTO 580
490 IF G$<>" " THEN GROW=GROW+INT(RND(1)
*3-1):GCL=GCL+INT(RND(1)*3-1):XX=GCL:YY=
GROW:GOSUB 870:G$=CHR$(DD):GOTO 490
500 IF GROW<8 THEN GROW=8 ELSE IF GROW>2
3 THEN GROW=23
510 IF GCL<0 THEN GCL=0 ELSE IF GCL>18 T
HEN GCL=18
520 LOCATE OGCL,OGROW:PRINT " "
```

```
530 SOUND 1,50,2
540 PEN 1:LOCATE GCL,GROW:PRINT CHR$(255
)
550 OGROW=GROW:OGCL=GCL
560 FOR I=1 TO 50:NEXT I
570 RETURN
580 LOCATE OGCL,OGROW:PRINT" "
590 LOCATE OPCOL,OPROW:PRINT" "
600 PEN 2
610 FOR YY=9 TO 23 STEP 2
620 FOR XX=1 TO 19 STEP 2
630 GOSUB 870:G$=CHR$(DD)
640 IF G$="A" OR G$="E" OR G$="I" OR G$=
"O" OR G$="U" THEN LOCATE XX,YY:PRINT G$
:SOUND 1,200,2:FLAG=-1
650 NEXT XX:NEXT YY:PEN 1
660 IF FLAG=-1 THEN GOTO 700
670 FOR I=160 TO 240:SOUND 1,I,3:NEXT I
680 SCORE=SCORE+10:GOSUB 760
690 LOCATE 1,30:PRINT"BONUS 10 POINTS"
700 LOCATE 1,32:PRINT"AGAIN (Y/N) ?"
710 IF INKEY$<>"" THEN GOTO 710
720 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 7
20
730 IF TEMP$="N" OR TEMP$="n" THEN AGAIN
=-1
740 IF SCORE>HIGH THEN HIGH=SCORE
750 RETURN
760 REM
770 PEN 2
780 LOCATE 1,5:PRINT"HIGH:";HIGH:LOCATE
1,6:PRINT"SCORE:";SCORE;" "
790 PEN 3
800 RETURN
810 REM
820 PEN 2
830 LOCATE 1,2:PRINT"VOWEL CHASE"
840 LOCATE 1,3:PRINT"==========="
850 PEN 3
860 RETURN
870 IF XX<1 OR XX>20 OR YY<1 OR YY>24 TH
EN DD=0:RETURN
880 LOCATE XX,YY
890 CALL MC
900 DD=PEEK(&97FF)
910 RETURN
```
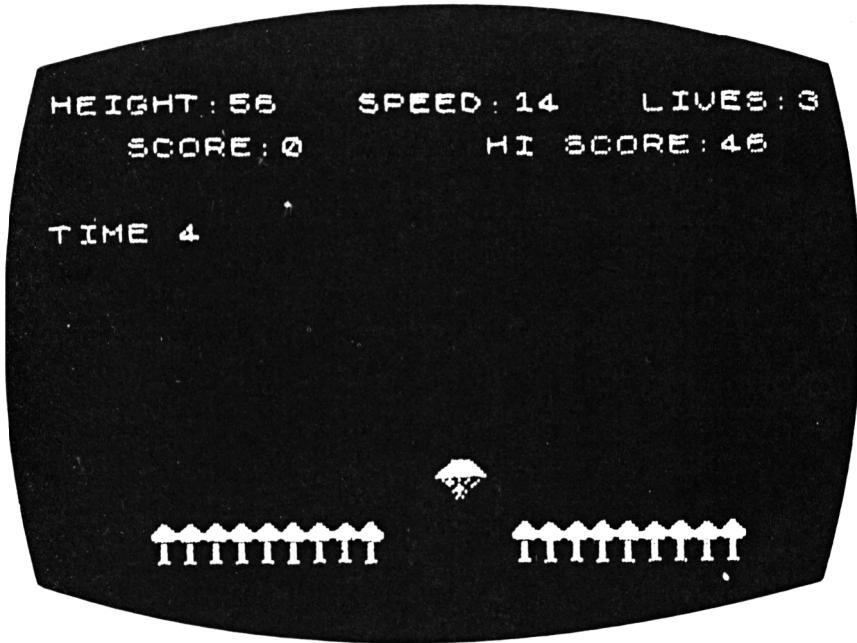
```
920 REM PUT MACHINE CODE INTO RAM
930 MC=&9700
940 POKE &9700,&CD
950 POKE &9701,&60
960 POKE &9702,&BB
970 POKE &9703,&32
980 POKE &9704,&FF
990 POKE &9705,&97
1000 POKE &9706,&C9
1010 RETURN
```

33

Parachute


```
HEIGHT:56       SPEED:14       LIVES:3
      SCORE:0           HI SCORE:46

TIME 4
```

Quick, quick, there is a plane crew parachuting down from a damaged airliner into a pine forest and the pilot's parachute hasn't opened - only you can save him from crashing into the ground.

How to play

At the top of the screen you will see the height and the speed of the pilot's descent. To open the parachute you must divide the height by the speed to find out how long it will take for the pilot to land. If your answer is correct the parachute will open and your pilot will float gently to the ground.

Your crew have three lives between them so try and keep them alive as long as you can.

The sooner you get the answer and type it in and press ENTER the earlier the parachute will open and the more points you will receive.

Programming Hints

You can make the game easier by reducing the numbers in lines 100 and 110.

Program

```
10 REM Parachute
20 GOSUB 760
30 ENV 1,1,15,1,15,-1,7
40 HIGH=0
50 REM LOOP
60 MODE 0
70 BORDER 13
80 LIVES=3:SCORE=0
90 REM LOOP
100 SPED=INT(RND(1)*90)+10
110 ANS=INT(RND(1)*12+1)
120 HEIGHT=ANS*SPED
130 GOSUB 870
140 GOSUB 250
150 IF LIVES>0 THEN GOTO 90
160 MODE 1:BORDER 15
170 LOCATE 1,2:PRINT"PARACHUTE"
180 LOCATE 1,3:PRINT"========="
190 LOCATE 1,5:PRINT"You scored ";SCORE
200 IF SCORE>HIGH THEN HIGH=SCORE:LOCATE
   1,8:PRINT"A new high score !!!"
210 LOCATE 1,12:PRINT"Press a key to pla
y again ";
220 IF INKEY$<>"" THEN GOTO 220
230 IF INKEY$="" THEN GOTO 230
240 GOTO 50
250 REM
260 IN$=""
270 I=4
280 SOUND 1,I*10,2
290 LOCATE 11,I:PRINT" "
300 LOCATE 11,I+1:PRINT CHR$(228)
```

```
310 T=1
320 T=T+1
330 GT$=INKEY$
340 IF GT$="" THEN GOTO 400
350 IF GT$=CHR$(13) AND IN$<>"" THEN GOT
O 500
360 IF GT$=CHR$(127) AND LEN(IN$)>0 THEN
 IN$=LEFT$(IN$,LEN(IN$)-1):GOTO 390
370 IF GT$>"9" OR GT$<"0" THEN GOTO 400
380 IF LEN(GT$)<2 THEN IN$=IN$+GT$:FOR L
=1 TO 50:NEXT L
390 LOCATE 18,5:PRINT IN$;" "
400 IF T<>50 THEN GOTO 320
410 I=I+1:IF I<>21 THEN GOTO 280
420 LOCATE 11,21:PRINT" "
430 LOCATE 11,22:PRINT CHR$(231)
440 SOUND 1,0,150,0,1,0,7
450 LIVES=LIVES-1
460 FOR L=1 TO 5000:NEXT L
470 RETURN
480 LOCATE 16,22:PRINT" "
490 RETURN
500 TRIES=TRIES+3
510 NUM=VAL(IN$)
520 IF NUM=ANS THEN GOTO 550
530 IN$=""
540 GOTO 390
550 REM
560 SCORE=SCORE+23-I-TRIES
570 FOR J=2 TO 20
580 LOCATE 10,J-1:PRINT"  "
590 LOCATE 10,J:PRINT"  "
600 LOCATE 10,J+1:PRINT CHR$(224);CHR$(2
25)
610 LOCATE 10,J+2:PRINT CHR$(226);CHR$(2
27)
620 FOR K=1 TO 200:NEXT K
630 NEXT
640 LOCATE 1,12:PRINT "A successful land
ing"
650 LOCATE 4,15:PRINT "You score ";23-I-
tries;" points"
660 FOR K=120 TO 240 STEP 10
670 SOUND 1,K,4
680 SOUND 2,K+1,4
690 NEXT K
```

```
700 FOR K=1 TO 2300:NEXT K
710 LOCATE 11,21:PRINT"   "
720 LOCATE 11,22:PRINT"   "
730 TRIES=0
740 RETURN
750 END
760 REM
770 SYMBOL AFTER 224
780 SYMBOL 224,0,7,15,31,63,127,255,81
790 SYMBOL 225,0,224,240,248,252,254,255
,18
800 SYMBOL 226,41,20,9,3,5,1,2,2
810 SYMBOL 227,36,72,16,128,64,0,128,128
820 SYMBOL 228,0,0,16,56,84,16,40,40
830 SYMBOL 229,24,24,24,24,24,24,60,126
840 SYMBOL 230,0,24,60,126,255,255,126,2
4
850 SYMBOL 231,0,0,0,0,129,90,126,255
860 RETURN
870 REM
880 PEN 3
890 CLS
900 LOCATE 1,24:PRINT"HEIGHT:";HEIGHT
910 LOCATE 13,24:PRINT"SPEED:";SPED
920 LOCATE 1,3:PRINT"SCORE:";SCORE
930 LOCATE 13,3:PRINT"HI:";HIGH
940 LOCATE 1,5:PRINT"LIVES:";LIVES
950 LOCATE 13,5:PRINT"TIME:"
960 FOR J=0 TO 19
970 IF J>7 AND J<14 THEN GOTO 1020
980 PEN 1
990 LOCATE J+1,21:PRINT CHR$(230)
1000 PEN 2
1010 LOCATE J+1,22:PRINT CHR$(229)
1020 NEXT J
1030 RETURN
```

34

Racer


```
SPEED:  92 KM/HR    TIME:  77 SEC




JOHN   WHAT IS YOUR ESTIMATE
OF THE DISTANCE TRAVELLED?
```

It's the last Grand Prix of the year and there are only two drivers who can win the World Championship - you or your opponent. There are two cars to choose from and the finishing line is in sight.

Only one can win and it's done by brain power not horse power.

How to play

The game is for two players so firstly type in your names and press ENTER after each one.

Both cars appear on the screen and the first player is set a problem to solve before moving their car.

The question is 'What is your estimate of the distance travelled?'

At the top of the screen you are shown the speed and the time taken by the car. You must work out how far you have come. The more accurate your answer the further your car will be moved by the computer so think carefully before you type in your answer.

The winner's name will be flashed on the screen and you will be asked 'do you want to play again'. Press Y or N for yes or no.

Hint To help you, 36 kilometres per hour = 10 metres per second. So a car travelling at 72 k. per hour for 20 seconds would cover 400 metres.

Program

```
10 REM RACER
20 MODE 1
30 BORDER 13
40 DIM PLAYER$(2),CAR(2)
50 SYMBOL AFTER 224
60 SYMBOL 224,0,102,255,255,255,102,0,0
70 SYMBOL 225,204,204,51,51,204,204,51,5
1
80 SYMBOL 226,255,255,255,255,255,255,25
5,255
90 REM LOOP
100 CLS:GOSUB 600
110 FOR I=1 TO 2
120 LOCATE 1,8+I*3:PRINT"What is player
";I;"'s name ?";
130 GOSUB 700:PLAYER$(I)=TEMP1$
140 NEXT I
150 LOCATE 1,19:PRINT PLAYER$(1);" has t
he top car"
160 LOCATE 1,20:PRINT PLAYER$(2);" has t
he bottom car"
170 LOCATE 1,25:PRINT"PRESS A KEY TO STA
RT"
180 IF INKEY$="" THEN GOTO 180
190 REM LOOP
200 MODE 0
210 CLS:GOSUB 640
220 PEN 3
230 LOCATE 1,7:PRINT STRING$(20,CHR$(226
))
```

```
240 LOCATE 1,13:PRINT STRING$(20,CHR$(22
6))
250 FOR I=7 TO 11
260 LOCATE 19,I+1:PRINT CHR$(225):NEXT I
270 CAR(1)=1:CAR(2)=1
280 PEN 1:LOCATE 2,9:PRINT CHR$(224)
290 PEN 2:LOCATE 2,11:PRINT CHR$(224)
300 FOR GO=1 TO 2
310 PEN 3
320 TME=INT(RND(1)*89)+11
330 SPED=INT(RND(1)*149)+51
340 LOCATE 1,17:PRINT"Speed:";SPED;" km/
hr "
350 LOCATE 1,19:PRINT"Time :";TME;" sec
"
360 PEN GO
370 LOCATE 1,22:PRINT PLAYER$(GO);", how
 far will it go"
380 PEN 3:LOCATE 1,24:PRINT "Number of m
etres    ?";CHR$(18):LOCATE 3,25
390 GOSUB 700
400 ANSWER=VAL(TEMP1$)
410 DIST=(SPED*TME*1000)/3600
420 SCORE=INT(5-ABS((DIST-ANSWER)/50))
430 PEN GO
440 FOR I=CAR(GO) TO CAR(GO)+SCORE
450 LOCATE CAR(GO)+1,7+GO*2:PRINT" "
460 CAR(GO)=CAR(GO)+1
470 LOCATE CAR(GO)+1,7+GO*2:PRINT CHR$(2
24)
480 SOUND 1,I*11,2
490 IF CAR(GO)>17 THEN GOTO 520
500 NEXT :NEXT
510 GOTO 300
520 MODE 1
530 CLS:GOSUB 600
540 LOCATE 1,8:PRINT PLAYER$(GO);" is th
e winner"
550 LOCATE 1,16:PRINT "Would you like to
 play again (Y/N) ?";
560 IF INKEY$<>"" THEN GOTO 560
570 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 5
70
580 IF TEMP$<>"N" AND TEMP$<>"n" THEN GO
TO 90
590 CLS:END
```

```
600 REM
610 LOCATE 1,2:PRINT"RACER"
620 LOCATE 1,3:PRINT"====="
630 RETURN
640 REM
650 PEN 1
660 LOCATE 1,2:PRINT"RACER"
670 LOCATE 1,3:PRINT"====="
680 PEN 3
690 RETURN
700 REM
710 TEMP$="":TEMP1$=""
720 REM LOOP
730 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 7
30
740 TEMP$=UPPER$(TEMP$)
750 IF TEMP$>=" " AND TEMP$<="Z" AND LEN
(TEMP1$)<10 THEN TEMP1$=TEMP1$+TEMP$:PRI
NT TEMP$;
760 IF TEMP$=CHR$(127) AND LEN(TEMP1$)>0
 THEN TEMP1$=LEFT$(TEMP1$,LEN(TEMP1$)-1)
:PRINT CHR$(8);" ";CHR$(8);
770 IF TEMP$<>CHR$(13) OR LEN(TEMP1$)=0
THEN GOTO 720
780 RETURN
```

35

Proverbs

There is an old proverb that says 'every cloud has a silver lining' and another which says 'it's an ill wind that blows nobody any good'.

But if your proverbs read 'every silver cloud has a lining' or 'it's nobody that an ill wind blows any good' could you sort them out and rearrange them properly?

Well, here is your chance to use the edit and cursor keys on your computer to move words around.

How to play

The screen will show you a proverb all jumbled up and you must reposition the words to make sense using the arrow cursor keys to move the cursor down and up.

Key S to STORE

Key I to INSERT

Line the cursor up against the word you wish to move and press the S key to store. Then move the cursor down the board until you line up against the word where you wish to insert.

Press I and the missing word will be pushed in and the other words will rearrange below.

You keep moving words and using the S and I keys until you have the proverb in the correct order.

Programming Hints

You can change lines 1120 onward to put in your own proverbs or well known sayings.

Program

```
 10 REM PROVERBS
 20 MODE 1
 30 SCORE=0:TRIES=0
 40 TEMP=1:WORD=1:STOR$=" "
 50 DIM WORD$(10,12)
 60 DIM LST(12),CHECK(12)
 70 PLACE=0:FLAG=0:OWORD=0
 80 FOR I=1 TO 10
 90 READ WORD$
100 FOR J=2 TO LEN(WORD$)
110 IF MID$(WORD$,J,1)<>" " THEN GOTO 15
O
120 WORD$(I,WORD)=MID$(WORD$,TEMP,(J-TEM
P))
130 TEMP=J
140 WORD=WORD+1
150 NEXT
160 WORD=1:TEMP=1
170 NEXT
180 REM
190 CLS:GOSUB 1030
200 REM
```

```
210 WORD=INT(RND(1)*10+1)
220 IF WORD=OWORD THEN GOTO 200
230 OWORD=WORD
240 CNT=0
250 FOR I=1 TO 12
260 IF WORD$(WORD,I)="" THEN GOTO 280
270 CNT=CNT+1
280 NEXT I
290 FOR I=1 TO CNT
300 RAND=INT(RND(1)*CNT+1)
310 IF CHECK(RAND)=1 THEN GOTO 300
320 LST(I)=RAND
330 CHECK(RAND)=1
340 LOCATE 14,I+5:PRINT WORD$(WORD,LST(I
))
350 NEXT I
360 LOCATE 13,6:PRINT">"
370 CURSOR=5
380 LOCATE 1,20:PRINT"I to insert the st
ored word"
390 LOCATE 1,21:PRINT"S to store the wor
d next to the '>'"
400 LOCATE 1,22:PRINT"The up and down ar
row keys to move"
410 GOSUB 580
420 LOCATE 6,15:PRINT"CORRECT !!!!"
430 FOR I=150 TO 230 STEP 20
440 SOUND 1,I,10
450 IF I<230 THEN SOUND 1,I-10,5
460 NEXT
470 FOR I=1 TO 12
480 LST(I)=0
490 CHECK(I)=0
500 NEXT I
510 FOR I=1 TO 6000:NEXT I
520 CLS:GOSUB 1030
530 LOCATE 1,11:PRINT"Do you want to pla
y again (Y/N) ?";
540 IF INKEY$<>"" THEN GOTO 540
550 TEMP$=INKEY$:IF TEMP$="" THEN GOTO 5
50
560 IF TEMP$<>"N" AND TEMP$<>"n" THEN GO
TO 180
570 CLS:END
580 REM
590 FOR I=1 TO 100:NEXT I
```

```
600 G$=INKEY$
610 IF G$="" THEN GOTO 590
620 IF G$<>CHR$(241) THEN GOTO 680
630 LOCATE 13,CURSOR+1:PRINT" "
640 CURSOR=CURSOR+1
650 IF CURSOR>16 THEN CURSOR=CURSOR-1
660 LOCATE 13,CURSOR+1:PRINT">"
670 GOTO 590
680 IF G$<>CHR$(240) THEN GOTO 740
690 LOCATE 13,CURSOR+1:PRINT" "
700 CURSOR=CURSOR-1
710 IF CURSOR<5 THEN CURSOR=CURSOR+1
720 LOCATE 13,CURSOR+1:PRINT">"
730 GOTO 590
740 IF G$<>"S" THEN GOTO 830
750 IF CURSOR<5 OR CURSOR>5+CNT THEN GOT
O 590
760 IF PLACE<>0 THEN GOTO 590
770 PLACE=LST(CURSOR-4)
780 STOR$=WORD$(WORD,PLACE)
790 FOR K=CURSOR-4 TO 11
800 LST(K)=LST(K+1)
810 NEXT K:GOSUB 1060
820 GOTO 930
830 IF G$<>"I" THEN GOTO 590
840 IF PLACE=0 THEN GOTO 590
850 IF CURSOR<5 OR CURSOR>5+CNT THEN GOT
O 590
860 FOR I=12 TO CURSOR-4 STEP -1
870 IF I<=1 THEN GOTO 890
880 LST(I)=LST(I-1)
890 NEXT I
900 LST(CURSOR-4)=PLACE:GOSUB 1060
910 PLACE=0
920 FLAG=0
930 FOR I=1 TO 12:IF LST(I)=0 THEN GOTO
960
940 LOCATE 14,I+5:PRINT WORD$(WORD,LST(I
))
950 IF LST(I)<>I THEN FLAG=1
960 NEXT I
970 LOCATE 1,18:PRINT"Word in storage :"
;stor$;CHR$(18)
980 STOR$=""
990 IF G$="S" THEN FLAG=1
1000 IF FLAG=0 THEN RETURN
```

```
1010 GOTO 660
1020 END
1030 REM
1040 LOCATE 1,2:PRINT"PROVERBS"
1050 RETURN
1060 REM
1070 FOR I=3 TO 15:LOCATE 1,I+1:PRINT CH
R$(18):NEXT I
1080 RETURN
1090 DATA " MANY HANDS MAKE LIGHT WORK "
1100 DATA " TOO MANY COOKS SPOIL THE BRO
TH "
1110 DATA " A STITCH IN TIME SAVES NINE
"
1120 DATA " EVERY CLOUD HAS A SILVER LIN
ING "
1130 DATA " DON'T PUT ALL YOUR EGGS IN O
NE BASKET "
1140 DATA " LOOK BEFORE YOU LEAP "
1150 DATA " MORE HASTE LESS SPEED "
1160 DATA " DON'T CROSS BRIDGES UNTIL YO
U COME TO THEM "
1170 DATA " PRIDE COMES BEFORE A FALL "
1180 DATA " HE WHO RIDES THE TIGER CANNO
T DISMOUNT "
```

36

Simon
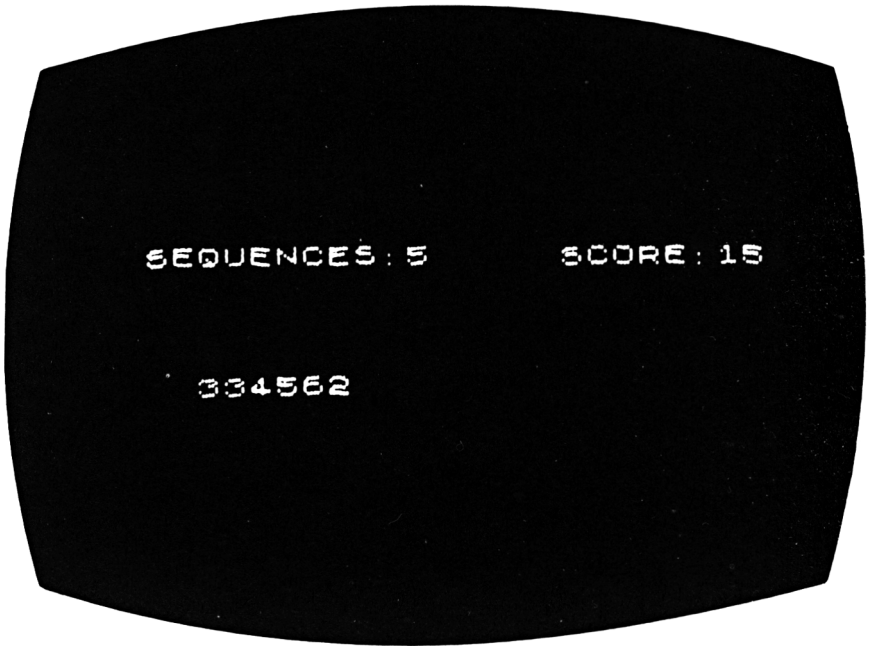
This is our version of this very popular game where you have to beat the computer by having a good memory.

You will be shown numbers, or colours, and have only a few seconds to memorise them before the screen goes blank and you are asked to repeat them in the same sequence as the original.

How to play

Your computer will ask if you want to play Numbers or Colours and you make your selection using keys 1 or 2. The computer will then put a sequence of numbers on the screen and ask you to remember them. If you type in the wrong sequence the computer will give you a loud 'raspberry' and show you the correct answer.

To stop playing numbers and switch to colours press the BREAK key and then press RUN again and you will be back at the beginning.

To play the colour sequence you have to press R for Red, Y for Yellow and B for Blue.

Programming Hints

The two routines for selecting the numbers and colours are in lines 720 and 460. Why not try and write your own routines to generate letters as well? Remember that computers recognise letters by their "ASCII' codes which start with 65 for A, then 66 for B and so on.

Program

```
1 'Simon
2 'Copyright (c) 1984 Vince Apps
3 'Amstrad CFC 464 version by R.P.Jones
10   GOSUB 410
20   GOSUB 50
30   GOSUB 330
40   ON VAL(z$) GOSUB 460,720
50 'Clear & Title Screen
60   MODE 1
70   WINDOW #1,1,40,1,7:WINDOW #2,1,40,8,
20:WINDOW #3,1,40,21,25:WINDOW #4,20,40,
19,19
80   LOCATE #1,15,2:PRINT #1,"S I M O N"
90   LOCATE #1,15,3:PRINT #1,STRING$(9,20
8)
100   RETURN
110 'Score Routine
120   LOCATE #1,2,5:PRINT #1,player$(1);"
 : ";score(1)
130   LOCATE #1,22,5:PRINT #1,player$(2);
" : ";score(2)
140   RETURN
150 'Correct
160   CLS#3:LOCATE #3,12,2:PRINT #3,"C O
R R E C T !"
170     FOR j=960 TO 30 STEP -30
180       SOUND 1,j,1,7
190     NEXT j
200   score=score+1:tries=tries+1:number=
number+1
210   GOSUB 920
220   flag=-1
230   RETURN
240 'Wrong
250   CLS#3:LOCATE #3,14,2:PRINT #3,"W R
O N G !"
260   SOUND 7,400,50,7,0,0,15
270     FOR j=1 TO 750
```

```
280    NEXT j
290    tries=tries+1
300    GOSUB 920
310    flag=0
320    RETURN
330  'Menu
340    PAPER #2,0:PEN #2,2:CLS #2
350    LOCATE #2,10,3:PRINT #2,"1. Colours
"
360    LOCATE #2,10,5:PRINT #2,"2. Numbers
"
370    LOCATE #2,10,8:PRINT #2,"Press 1 or
 2";
380    z$=INKEY$:IF z$="" THEN 380
390    IF z$<"1" OR z$>"2" THEN 380
400    RETURN
410  'Initialise
420    INK 0,0:INK 1,6:INK 2,24:INK 3,2
430    sequence$=""
440    score=0:tries=0:number=1
450    RETURN
460  'Colours
470      FOR i=1 TO 10
480       rand=INT(RND*3)+1
490       sequence$=sequence$+STR$(rand)
500      NEXT i
510    GOSUB 920
520    PAPER #2,0:CLS #2
530    LOCATE #2,10,5
540      FOR i=1 TO number
550       PEN #2,VAL(MID$(sequence$,2*i,1)
):PRINT #2,CHR$(143);" ";
560      NEXT i
570      FOR i=1 TO 1500
580      NEXT i
590    CLS #2
600    GOSUB 970
610    check$=LEFT$(check$,2*number)
620      FOR i=1 TO LEN(check$)
630       IF MID$(check$,i,1)=" "THEN 670
640       IF MID$(check$,i,1)="R"THEN MID$
(check$,i,1)="1"
650       IF MID$(check$,i,1)="Y"THEN MID$
(check$,i,1)="2"
660       IF MID$(check$,i,1)="B"THEN MID$
(check$,i,1)="3"
670      NEXT i
680    IF check$=LEFT$(sequence$,2*number)
 THEN GOSUB 160 ELSE GOSUB 240
690    IF NOT flag THEN 520
700    IF number>10 THEN 1090
710    GOTO 520
```
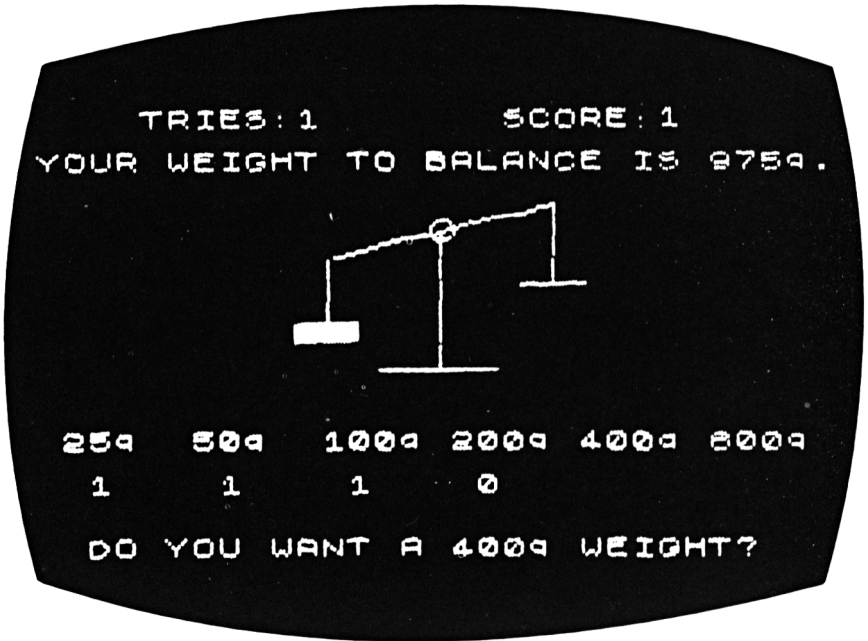
```
720  'Numbers
730     FOR i=1 TO 10
740       rand=INT(RND*10)
750       sequence$=sequence$+STR$(rand)
760     NEXT i
770  GOSUB 920
780  PAPER #2,2:CLS #2:PEN #2,3
790  LOCATE #2,10,5
800     FOR i=1 TO number
810       PRINT #2,MID$(sequence$,2*i,1);"
 ";
820     NEXT i
830     FOR i=1 TO 1500
840     NEXT i
850  CLS #2
860  GOSUB 970
870  check$=LEFT$(check$,2*number)
880  IF check$=LEFT$(sequence$,2*number)
 THEN GOSUB 160 ELSE GOSUB 240
890  IF NOT flag THEN 780
900  IF number>10 THEN 1090
910  GOTO 780
920  'Score Routine
930  LOCATE #1,5,5:PRINT #1,"Tries  :   "
;tries
940  LOCATE #1,25,5:PRINT #1,"Score  :
";score
950  LOCATE #1,8,7:PRINT #1,"Number in s
equence  :   ";number
960  RETURN
970  'Enter answer
980  CLS#3:LOCATE #3,10,2:PRINT #3,"Repe
at the sequence"
990  LOCATE #3,10,4
1000  check$=" "
1010     FOR i=1 TO number
1020       z$=INKEY$:IF z$="" THEN 1020
1030       z$=UPPER$(z$)
1040       IF z$>="0" AND z$<="9" THEN 106
0
1050       IF z$<>"R" AND z$<>"Y" AND z$<>
"B" THEN 1020
1060       check$=check$+z$+" "
1070     NEXT i
1080  RETURN
1090  'Done
1100  number=number-1:GOSUB 920
1110  CLS#2
1120  LOCATE #2,5,5:PRINT #2,"A N O T H
E R   G O  ?  (Y / N)";
1130  z$=INKEY$:IF z$=""THEN 1130 ELSE z
$=UPPER$(z$)
1140  IF z$="Y" THEN 10 ELSE END
```

37

Balance

TRIES: 1   SCORE: 1
YOUR WEIGHT TO BALANCE IS 875g.

25g   50g   100g 200g 400g 800g
  1   1   1   0

DO YOU WANT A 400g WEIGHT?

If you like baking cakes, weighing out sweets or even checking out who has the heaviest conker this year then this program is for you.

You have to work out, in as few moves as possible, from a selection of weights, how many you need to balance a set of scales.

How to play

On the screen you will see a set of scales with a weight on the left hand set of pans.

The computer will ask you for your choice of weights from six which will be displayed, and marked, along the bottom of the screen. The computer will move along the row and stop at each weight and ask you if you wish to use it. For yes press Y and for no press N.

The screen will show your tries and scores.

Program

```
 10 REM BALANCE
 20 MODE 1
 30 SCORE=0:TRIES=0
 40 DIM BAL$(2)
 50 BAL$(0)=STRING$(7,"0")
 60 BAL$(1)=STRING$(7,"+")
 70 BAL$(2)=STRING$(7,"=")
 80 REM LOOP
 90 CLS:GOSUB 450
100 GOSUB 490
110 WEIGHT=25
120 FOR I=1 TO 36 STEP 6
130 LOCATE I+1,14:PRINT WEIGHT;"g."
140 WEIGHT=WEIGHT*2
150 NEXT I
160 TTAL=0
170 TARGET=INT(RND(1)*63+1)*25
180 LOCATE 1,7:PRINT "Your weight to bal
ance is ";TARGET;" g."
190 TRIES=TRIES+1
200 PARTWEIGHT=25
210 FOR I=1 TO 6
220 LOCATE 1,9:PRINT"Do you want a ";PAR
TWEIGHT;" g. weight ?"
230 TEMP1$=INKEY$:IF TEMP1$="" THEN GOTO
 230
240 LOCATE (I-1)*6+3,16
250 IF TEMP1$="Y" OR TEMP1$="y" THEN TTA
L=TTAL+PARTWEIGHT:PRINT"1" ELSE PRINT"0"
260 PARTWEIGHT=PARTWEIGHT*2
270 SOUND 1,SQR(PARTWEIGHT)*5,15
280 FOR J=1 TO 1000:NEXT J
290 NEXT I
300 IF TTAL=TARGET THEN GOSUB 520 ELSE G
OSUB 600
310 FOR I=20 TO 22
320 LOCATE 25,I+1:PRINT"****":NEXT I
330 LOCATE 17,18:PRINT TTAL;"g":LOCATE 3
1,18:PRINT target;"g"
340 LEFT=17
```
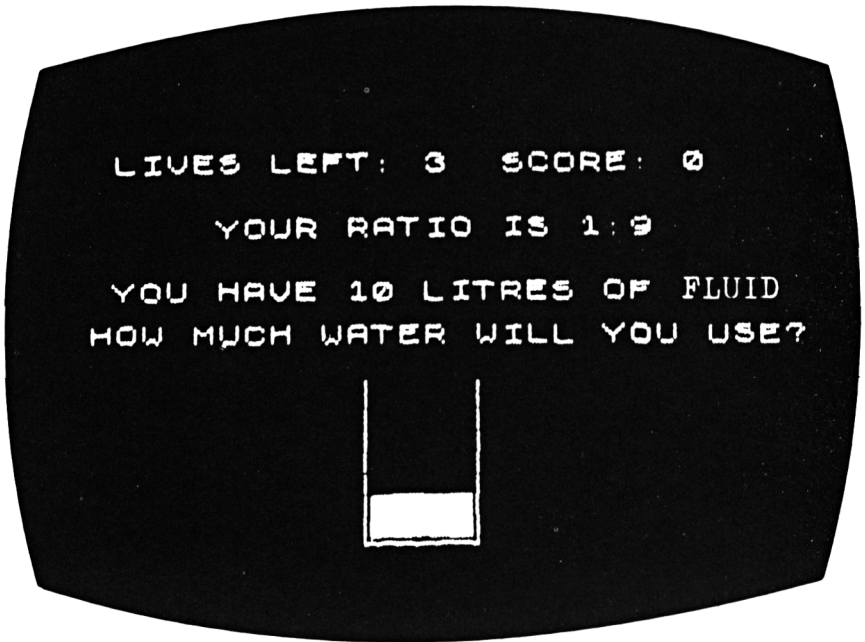
```
350 IF TTAL=TARGET THEN FOR RIGHT=4 TO 1
0:LEFT=LEFT-1:HEIGHT=LEFT:GOSUB 660:HEIG
HT=RIGHT:GOSUB 720:NEXT RIGHT:RIGHT=10:G
OTO 400
360 LEFT=11
370 IF TTAL>TARGET THEN FOR RIGHT=10 TO
16:LEFT=LEFT-1:HEIGHT=LEFT:GOSUB 660:HEI
GHT=RIGHT:GOSUB 720:NEXT RIGHT:RIGHT=16:
GOTO 400
380 RIGHT=11
390 FOR LEFT=10 TO 16:RIGHT=RIGHT-1:HEIG
HT=LEFT:GOSUB 660:HEIGHT=RIGHT:GOSUB 720
:NEXT LEFT:LEFT=16
400 FOR I=1 TO 4000:NEXT I
410 LOCATE 1,25:PRINT"Press a key for mo
re ";
420 IF INKEY$<>"" THEN GOTO 420
430 IF INKEY$="" THEN GOTO 430
440 GOTO 80
450 REM
460 LOCATE 1,2:PRINT"BALANCE"
470 LOCATE 1,3:PRINT"======="
480 RETURN
490 REM
500 LOCATE 1,5:PRINT"SCORE:";SCORE:LOCAT
E 19,5:PRINT"TRIES:";TRIES
510 RETURN
520 REM
530 SCORE=SCORE+1
540 LOCATE 1,18:PRINT"CORRECT !!!"
550 FOR I=130 TO 230 STEP 20
560 SOUND 1,I,8
570 SOUND 2,I+5,7
580 NEXT I
590 RETURN
600 REM
610 LOCATE 1,18:PRINT"WRONG !!!"
620 FOR I=80 TO 30 STEP -10
630 SOUND 1,I,5
640 NEXT I
650 RETURN
660 REM
670 WINDOW 15,22,20,25:CLS:WINDOW 1,40,1
,25
680 LOCATE 16,25-HEIGHT\3
690 PRINT BAL$(HEIGHT MOD 3)
```

```
700 FOR K=1 TO 500:NEXT K
710 RETURN
720 REM
730 WINDOW 29,36,20,25:CLS:WINDOW 1,40,1
,25
740 LOCATE 30,25-HEIGHT\3
750 PRINT BAL$(HEIGHT MOD 3)
760 FOR K=1 TO 500:NEXT K
770 RETURN
```

38

Chemist


```
LIVES LEFT: 3   SCORE: 0

YOUR RATIO IS 1:9

YOU HAVE 10 LITRES OF FLUID
HOW MUCH WATER WILL YOU USE?
```

A mad scientist has made a highly powerful liquid which, if not mixed with water and diluted properly, will explode and destroy your house.

Only you can stop the liquid exploding by working out a formula to decide how much water is needed to make the mixture safe.

How to play

The screen will show a flask containing the dangerous fluid and telling you how many litres the vessel contains.

You must work out how much water is required to make the fluid harmless using the ratio at the top of the screen. If you are correct to within 5% you are safe but an error outside this range will mean an explosion and the loss of one of your three lives.

Type in your estimate of water needed.

Programming Hints

You can alter the ratios given by changing the numbers in line 20. Increase them to make the game more difficult. The number in line 640 governs the number of lives you have at the start.

Program

```
1 'Chemist
2 'Copyright (c) 1984 Vince Apps
3 'Amstrad CPC 464 version by R.P.Jones
10   GOSUB 620
20   fluid=INT(RND*4)+1:water=INT(RND*5)+
5
30   GOSUB 520
40   GOSUB 590
50   PEN #2,3:LOCATE #2,3,2:PRINT #2,"You
r ratio is ";fluid;" parts fluid to"
60   LOCATE #2,3,3:PRINT #2,water;" parts
 water."
70     FOR i=2 TO 8
80       LOCATE #4,5,i:PRINT #4,CHR$(211)
90       LOCATE #4,10,i:PRINT#4,CHR$(209)
100      NEXT i
110      FOR i=5 TO 10
120        LOCATE #4,i,8:PRINT #4,CHR$(208)
130      NEXT i
140    level1=8-INT(fluid*7/(fluid+water))
:GOSUB 730
150    rand=INT(RND*20)+1
160    PEN #5,3:LOCATE #5,2,1:PRINT #5,"Yo
u have ";rand;" litres"
170    LOCATE #5,2,2:PRINT #5,"of fluid."
180    LOCATE #5,2,4:PRINT #5,"How much wa
ter will":LOCATE #5,2,5:PRINT #5,"you us
e ?"
190    GOSUB 410
200    IF LEN(answer$)>6 THEN 190 ELSE ans
wer=VAL(answer$)
210    IF answer>180 THEN 190
220    ratio=(rand/fluid)*water
```

```
230   IF answer>(ratio-ratio/20) AND answ
er<(ratio+ratio/20) THEN GOSUB 260 ELSE
GOSUB 330
240   IF lives=0 THEN 660
250   GOTO 20
260  'Correct
270   score=score+1
280   GOSUB 590
290   CLS #3:LOCATE #3,12,2:PRINT #3,"C O
 R R E C T !"
300     FOR i=1 TO 1000
310     NEXT i
320   RETURN
330  'Wrong
340   lives=lives-1
350   GOSUB 590
360   CLS #3:LOCATE #3,14,2:PRINT #3,"W R
 O N G !"
370     FOR i=1 TO 1000
380     NEXT i
390   RETURN
400   RETURN
410  'Enter Answer
420   CLS#3
430   answer$="":PEN #3,2:LOCATE #3,18,2
440   z$=INKEY$:IF z$="" THEN 440
450   IF z$=CHR$(13) AND LEN(answer$)>0 T
HEN RETURN
460   IF z$="." THEN 480
470   IF z$<"0" OR z$>"9" THEN 440
480   answer$=answer$+z$
490   PRINT #3,z$;
500   GOTO 440
510 GOTO 510
520  'Clear & Title Screen
530   MODE 1:BORDER 6
540   WINDOW #1,1,40,1,7:WINDOW #2,1,40,8
,11:WINDOW #3,1,40,21,25:WINDOW #4,1,15,
12,20:WINDOW #5,16,40,12,20
550   LOCATE #1,13,2:PRINT #1,"C H E M I
S T"
560   LOCATE #1,13,3:PRINT #1,STRING$(13,
208)
570   PAPER #2,2:CLS #2:PAPER #3,3:CLS #3
:PAPER #4,0:CLS #4:PAPER #5,2:CLS #5
580   RETURN
```
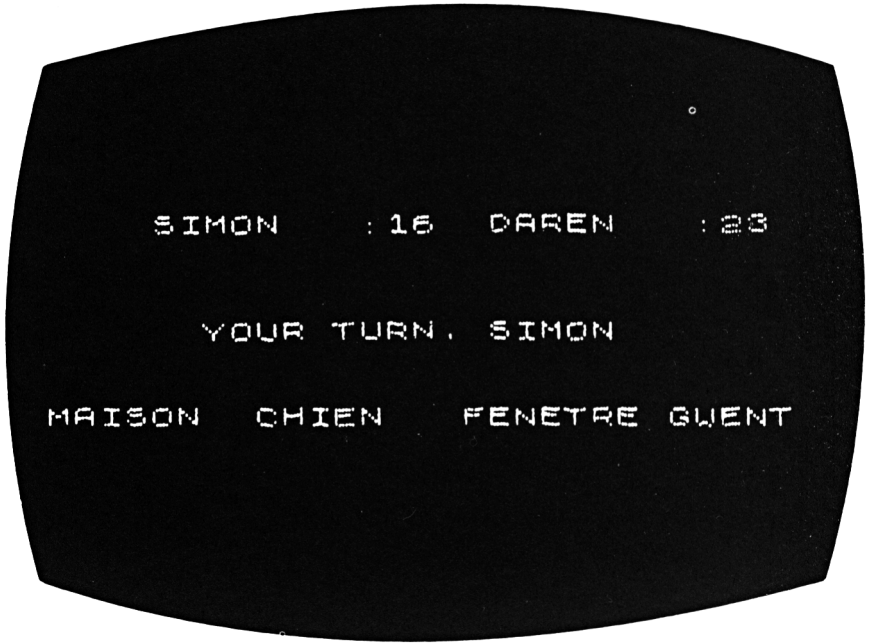
```
590 'Score Routine
600   LOCATE #1,2,5:PRINT #1,"Score  :   "
;score:LOCATE #1,25,5:PRINT #1,"Lives  :
  ";lives
610   RETURN
620 'Initialise
630   INK 2,24:INK 3,2
640   score=0:lives=3
650   RETURN
660 'Done
670   CLS #2:CLS #3:CLS #4:CLS #5
680   LOCATE #2,5,5:PRINT #2,"A N O T H E
  R   G O   ?   (Y / N)";
690   z$=INKEY$:IF z$=""THEN 690 ELSE z$=
UPPER$(z$)
700   IF z$="Y" THEN 10 ELSE END
710   RETURN
720 'Fluid into beaker
730     FOR i=8 TO level1 STEP -1
740       FOR j=5 TO 10
750         LOCATE #4,j,i:PRINT #4,CHR$(14
3)
760       NEXT j
770     NEXT i
780   RETURN
```

39

Odd Word Out


```
    SIMON     :16   DAREN      :23

          YOUR TURN. SIMON

  MAISON    CHIEN     FENETRE GWENT
```

At last - a chance to prove how quick you are at spotting the odd word, and also beat a time clock.

You will be given a selection of words which either mean the same thing or are related in some way except for one 'odd man out' which must be identified.

How to play

This is a game for two players so put in your names, remembering to press ENTER between each one.

Your screen will now display four words, for example:

herring, pike, bridge, roach

The odd man out here is bridge - the others are all fish.

It could have been herring, pike, roach, bream, however, and then which would have been the odd man out?

Alongside each word you will see a number. When you have identified the word you believe to be the odd word, key in your number. You have ten seconds to beat the clock.

Programming Hints

Random selection may mean that the same sequence may pop up twice running.

If you would like to use your own selection of words then you can change the data in lines 930 to 1100.

Program

```
1     'Odd Word Out
2     'Copyright (c) 1984 Vince Apps
3     'Amstrad CPC 464 version by R.F.Jone
s
10     EVERY 50,0 GOSUB 1110
20     z=10
30     DIM word$(54),Player$(2),score(2)
40       FOR i=1 TO 54
50         READ word$(i)
60       NEXT
70     GOSUB 650
80     LOCATE #2,4,3:PRINT #2,"How many pl
ayers, 1 or 2 ?";
90     z$=INKEY$:IF z$="" THEN 90
100    IF z$<"1" OR z$>"2" THEN 90
110    num=VAL(z$)
120      FOR i=1 TO num
130        LOCATE #2,2,6+(i*2-1):PRINT #2,"
Name of Player ";i;"   ";
140        INPUT #2,player$(i)
150      NEXT i
160      FOR go=1 TO num
170        CLS#2
180        GOSUB 710
```

```
190       rand1=INT(RND*4)+1
200       rand2=INT(RND*4)+1
210       IF rand1=rand2 THEN 200
220       rand3=INT(RND*4)+1
230       IF rand3=rand2 OR rand3=rand1 TH
EN 220
240       rand4=10-rand3-rand2-rand1
250       group=INT(RND*18)
260       extra=INT(RND*18)
270       IF group=extra THEN 260
280       group=group*3+1:extra=extra*3+IN
T(RND*3)+1
290       LOCATE #3,5,2:PRINT #3,player$(g
o);"'s turn"
300          FOR j=1 TO 1500
310          NEXT j
320       LOCATE #2,1+(rand1-1)*10,5:PRINT
 #2,word$(group)
330       LOCATE #2,1+(rand2-1)*10,5:PRINT
 #2,word$(group+1)
340       LOCATE #2,1+(rand3-1)*10,5:PRINT
 #2,word$(group+2)
350       LOCATE #2,1+(rand4-1)*10,5:PRINT
 #2,word$(extra)
360       LOCATE#2,5,7:PRINT #2,"(1)"
370       LOCATE#2,15,7:PRINT #2,"(2)"
380       LOCATE#2,25,7:PRINT #2,"(3)"
390       LOCATE#2,35,7:PRINT #2,"(4)"
400       LOCATE#3,5,4:PRINT #3,"Which is
the odd one out ?";
410       t=0
420       timeleft=10-t
430       IF timeleft<1 THEN temp$="0":GOT
O 480
440       LOCATE #4,1,1:PRINT #4,timeleft;
" seconds left "
450       temp$=INKEY$
460       IF temp$="" OR temp$<"1" OR temp
$>"4" THEN 420
470        PRINT #3,temp$;
480       IF rand4=VAL(temp$) THEN GOSUB 7
50 ELSE IF VAL(temp$)=0 THEN GOSUB 880 E
LSE GOSUB 820
490       IF score(go)>99 THEN 540
500       CLS #3
510          FOR j=1 TO 750
```
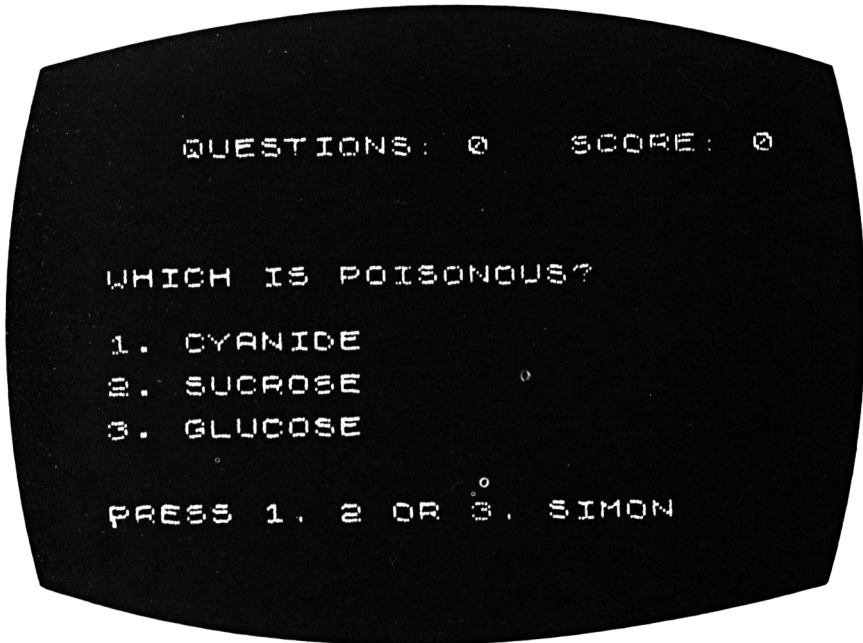
```
520         NEXT j
530      NEXT go
540   IF score(1)<100 AND score(2)<100 TH
EN 160
550      FOR i=1 TO 1000
560      NEXT i
570   CLS#2:CLS#3:GOSUB 710
580   which=1:IF score(2)>99 THEN which=2
590   LOCATE #2,10,3:PRINT #2,player$(whi
ch);" wins."
600   LOCATE #3,2,2:PRINT #3,"Do you want
 another go (Y/N)";
610   z$=INKEY$:IF z$="" THEN 610
620   z$=UPPER$(z$):IF z$="Y" THEN score(
1)=0:score(2)=0:player$(1)="":player$(2)
="":GOSUB 710:GOTO 70
630   IF z$<>"N" THEN 610
640   END
650  'Clear & Title Screen
660   MODE 1
670   WINDOW #1,1,40,1,6:WINDOW #2,1,40,7
,20:WINDOW #3,1,40,21,25:WINDOW #4,20,40
,19,19
680   LOCATE #1,8,2:PRINT #1,"O D D   W O
R D   O U T"
690   LOCATE #1,8,3:PRINT #1,STRING$(23,2
08)
700   RETURN
710  'Score Routine
720   LOCATE #1,2,5:PRINT #1,player$(1);
" : ";score(1)
730   LOCATE #1,22,5:PRINT #1,player$(2)
;" : ";score(2)
740   RETURN
750  'Correct
760   CLS#3:LOCATE #3,12,2:PRINT #3,"C O
R R E C T !"
770     FOR j=960 TO 30 STEP -30
780       SOUND 1,j,1,7
790     NEXT j
800   score(go)=score(go)+timeleft
810   RETURN
820  'Wrong
830   CLS#3:LOCATE #3,14,2:PRINT #3,"W R
O N G !"
840   SOUND 7,400,50,7,0,0,15
```

```
850     FOR j=1 TO 750
860     NEXT j
870    RETURN
880    'Out of time
890    CLS#3:LOCATE #3,10,2:PRINT #3,"T O
   O   L A T E !"
900     FOR j=1 TO 750
910     NEXT j
920   RETURN
930   DATA London,Paris,Rome
940   DATA Cat,Gerbil,Horse
950   DATA Ford,Bridge,Ferry
960   DATA Roach,Pike,Herring
970   DATA Quarry,Quiz,Quarter
980   DATA Ping,Bang,Click
990   DATA Dorset,Sussex,Suffolk
1000   DATA Yacht,Dinghy,Sloop
1010   DATA Minim,Level,Refer
1020   DATA France,Germany,Italy
1030   DATA Maison,Chien,Fenetre
1040   DATA Spectrum,Dragon,Electron
1050   DATA Cricket,Football,Tennis
1060   DATA George,Charles,Richard
1070   DATA Stour,Trent,Thames
1080   DATA Dyfed,Gwent,Clwyd
1090   DATA Canary,Finch,Sparrow
1100   DATA Draw,Run,Print
1110   t=t+1:RETURN
```

40

Science Quiz

```
QUESTIONS: 0    SCORE: 0


WHICH IS POISONOUS?

1. CYANIDE

2. SUCROSE

3. GLUCOSE

PRESS 1, 2 OR 3, SIMON
```

This is a program of multiple choice questions where you are given a selection of statements and asked to choose the correct answer.

If you find these questions too difficult or too easy you can ask your parents to provide your computer with some questions of your own. We will tell you how at the end of this introduction.

How to play

The computer will ask for your name and you type it in and press ENTER.

A choice of statements will appear on the screen and you will be asked to choose the correct answer.

Example: 'What will you grow if you plant an acorn?'

1. An elm tree

2. A rose

3. An oak tree

To answer press 1, 2 or 3

If you are correct the computer will tell you so.

If you are wrong the computer will tell you 'That is wrong'. Remember that the faster you answer, the more points you score. If you are too slow, you will run out of time.

Programming Hints

The lines to change for your own questions are 1010 to 1200. Type in the question first, then the correct answer followed by two wrong answers. Remember to enclose each item in inverted commas ("") as shown on the listing.

Program

```
1      'Science Quiz
2      'Copyright (c) 1984 Vince Apps
3      'Amstrad CPC 464 version by R.F.Jone
s
10     EVERY 50,0 GOSUB 1210
20     GOSUB 470
30     DIM question$(20),answer$(20,3),an
s(3)
40     LOCATE #2,5,2:PRINT #2,"What is yo
ur name ";
50     score=0:questions=0
60     lastquest=0
70     INPUT #2,name$
80     IF name$="" THEN 40
90     GOSUB 600
100    CLS #2
110    GOSUB 690
120    flag=0
130    question=INT(RND*20)+1
```

```
140    IF question=lastquest THEN 120
150    ans(1)=INT(RND*2)+1
160    ans(2)=INT(RND*2)+1
170    IF ans(2)=ans(1) THEN 160
180    ans(3)=6-ans(1)-ans(2)
190    GOSUB 540
200    GOSUB 730
210    questions=questions+1
220    GOSUB 360
230    IF guess=0 THEN GOSUB 970:GOTO 250
240    IF ans(guess)=1 THEN GOSUB 780 ELS
E GOSUB 880
250    GOSUB 690
260    IF questions<20 THEN 120
270    CLS#2:LOCATE #2,3,5:PRINT #2,"You
scored";score;" out of 200"
280    level$="":IF score<25 THEN level$=
"not very good"
290    IF score>24 AND score<75 THEN leve
l$="average"
300    IF score>74 AND score<125 THEN lev
el$="pretty good"
310    IF score>124 AND score<160 THEN le
vel$="superb"
320    IF score>159 AND score<200 THEN le
vel$="out of this world"
330    IF score=200 THEN level$="cheating
!!"
340    LOCATE #2,10,7:PRINT #2,"You were
";level$
350    END
360    'Enter answer
370    LOCATE #3,2,2:PRINT #3,name$;", Pr
ess 1,2, or 3  ";
380    t=0
390    timeleft=10-t
400    LOCATE #4,1,1:PRINT #4,timeleft;"
seconds left";" "
410    z$=INKEY$
420    IF z$<>"" THEN 440
430    IF t<10 THEN 390 ELSE guess=0:GOTO
 460
440    IF z$<"1" OR z$>"3" THEN 410
450    guess=VAL(z$)
460    RETURN
470    'Clear & Title Screen
480    MODE 1: INK 0,2:INK 1,24:BORDER 21
```

```
490    WINDOW #1,1,40,1,6:WINDOW #2,1,40,
7,20:WINDOW #3,1,40,21,25
500    WINDOW #4,20,40,18,18
510    LOCATE #1,8,2:PRINT #1,"S C I E N
C E   Q U I Z"
520    LOCATE #1,8,3:PRINT #1,STRING$(23,
208)
530    RETURN
540    'Print Question
550    CLS#2
560    LOCATE #2,2,2:PRINT #2,LEFT$(quest
ion$(question),37)
570    IF LEN(question$(question))<38 THE
N RETURN
580    LOCATE #2,2,3:PRINT #2,MID$(questi
on$(question),38,39)
590    RETURN
600    'Read data into arrays
610    FOR i=1 TO 20
620      READ question$(i)
630      question$(i)=question$(i)+" ?"
640        FOR j=1 TO 3
650          READ answer$(i,j)
660        NEXT j
670    NEXT i
680    RETURN
690    'Score Routine
700    LOCATE #1,5,5:PRINT #1,"Score  :
";Score
710    LOCATE #1,20,5:PRINT #1,"Questions
   :  ";Questions
720    RETURN
730    'Choices
740    FOR i=1 TO 3
750      LOCATE #2,5,4+(i*2-1):PRINT #2,i;
".  ";answer$(question,ans(i))
760    NEXT i
770    RETURN
780    'Correct
790    CLS#3:CLS#4
800    LOCATE #3,12,2:PRINT #3,"C O R R E
C T !"
810      FOR i=1 TO 750
820      NEXT i
830    score=score+timeleft
840    GOSUB 690
```

```
850      FOR i=1 TO 750
860       NEXT i
870    RETURN
880  'Wrong
890    CLS#3:CLS#4
900    LOCATE #3,14,2:PRINT #3,"W R O N G
! "
910      FOR i=1 TO 750
920       NEXT i
930    GOSUB 690
940      FOR i=1 TO 750
950       NEXT i
960    RETURN
970  'Out of time
980    CLS #3:CLS #4:LOCATE #3,8,2:PRINT #
3,"O U T    O F    T I M E !"
990    FOR i=1 TO 1000:NEXT i
1000    RETURN
1010    DATA Which planet is nearest to th
e Sun,Mercury,Mars,Venus
1020    DATA What is the common name for S
odium Chloride,Salt,Ammmonia,Sugar
1030    DATA Which will float in water,Cor
k,Iron,Glass
1040    DATA What will grow if you plant a
n acorn,An Oak tree,A rose,An Elm tree
1050    DATA At what temperature will wate
r freeze,0 Centigrade,100 Centigrade,-21
2 Centigrade
1060    DATA What is the boiling point of
water,100 Centigrade,0 Centigrade,212 Ce
ntigrade
1070    DATA Which will dissolve in water,
Sugar,Sand,Wood
1080    DATA Which is poisonous,Cyanide,Gl
ucose,Sucrose
1090    DATA What do butterflies eat,Necta
r,Cabbages,Almost anything
1100    DATA If you dropped an iron ball a
nd a pea which would fall fastest,Neithe
r,The iron ball,The pea
1110    DATA How many legs has a spider,ei
ght,four,six
1120    DATA What will you get if you mix
blue and yellow,Green,Blue and yellow st
ripes,Orange
```

```
1130   DATA Which tree do conkers come fr
om,Horse Chestnut,Oak,Beech
1140   DATA How far will a car travelling
 at 60 Km/H move in 15 minutes,15 Km,60
Km,30 Km
1150   DATA Which would feel hottest in a
 hot drink,Metal Spoon,Plastic Spoon,Pen
cil
1160   DATA Which will conduct electricit
y,Copper,Wood,Rubber
1170   DATA Cygnet is a young,Swan,Duck,G
oose
1180   DATA Which is an electrical insula
tor,Rubber,Copper,Iron
1190   DATA An eclipse of the Sun is caus
ed by,The Moon,A thunderstorm,A power cu
t
1200   DATA Which will be attracted by a
magnet,Iron,Copper,Gold
1210   t=t+1:RETURN
```

If your family already owns an Amstrad – or if you are thinking of buying one – the chances are that it is because you have thought about the part computers are going to play in your family's future. The programs in this book have been designed to help the younger members of your family to handle the Amstrad and to increase their general knowledge – whilst also enjoying themselves.

All of these ideas have been developed with the assistance of educationalists and a professional programmer. They are intended to give young users games which will complement their schooling and also give them a head start in using a micro.

Subjects include languages, geography, mathematics, and science. Hints are also provided to show how the contents of the programs can be changed to suit the family as their skill improves.

The Author
Vince Apps is a regular contributor to journals such as *Popular Computing Weekly* and *Home Computing Weekly*. He is a graduate of Sussex University in Computer Science and has his own successful software company.

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